

# **Indiana Department of Environmental Management 401 Water Quality Certification Application**

I-69 Evansville to Indianapolis Project  
Section 1

I-64/SR 57 Interchange to SR 64  
Located in Vanderburgh, Gibson and Warrick Counties, Indiana

DES# 0300377

*Date:*  
September 13, 2007

*Prepared For:*  
Indiana Department of Transportation  
Environmental Assessment Section  
Environment, Planning and Engineering Division  
Government Building North, Room N642  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2249

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# Application for Authorization to Discharge Dredged or Fill Material to Isolated Wetlands and/or Waters of the State

State Form 51821 (R / 10-04)

Indiana Department of Environmental Management

- INSTRUCTIONS:**
1. Read the instruction sheet before filling out this form.
  2. You must complete all applicable sections of this form

1. Applicant Information		2. Agent Information	
Name of Applicant:		Name of Agent:	
Mailing address: (Street/ PO Box/ Rural Route, City, State, ZIP Code)		Mailing address: (Street/ PO Box/ Rural Route, City, State, ZIP Code)	
Daytime Telephone Number:		Daytime Telephone Number:	
Fax Number:		Fax Number:	
E-mail address: (optional)		E-mail address: (optional)	
Contact person: (required)		Contact person:	
3. Project/Tract Location			
County:		Nearest city or town:	
U.S.G.S. Quadrangle map name (Topographic map):		Project street address (if applicable):	
Quarter:	Section:	Township:	Range:
Type of aquatic resource(s) to be impacted: (Attach Worksheet One)		Project name or title: (if applicable)	
Other location descriptions or driving directions:			
4. Project Purpose and Description (Use additional sheet(s) if required)			
Has any construction been started? Yes      No		Anticipated start date:	
If yes, how much work is completed?			
Purpose of project and overview of activities:			



**5. Avoidance, Minimization, and Mitigation Information: Applicants must answer all of the following questions**

*(Use additional sheet(s) if necessary - provide a detailed response to all applicable questions).*

**A. For projects with Class II isolated wetlands –**

1. Is there a reasonable alternative to the proposed activity?
  
  
  
  
  
  
  
2. Is the proposed activity reasonably necessary or appropriate?

**B. For projects with Class III wetlands, adjacent wetlands, and/or streams, rivers, lakes or other water bodies –**

1. Is there a practicable alternative to the proposed activity?
  
  
  
  
  
  
  
2. Have practicable and appropriate steps to minimize impacts to water resources been taken?

Describe all compensatory mitigation required for unavoidable impacts.

**6. Drawing/Plan Requirements (*applicants must provide the following*)**

- a. Top/aerial/overhead views of the project site showing existing conditions and proposed construction. See Attachments #5 and #6
- b. Cross sectional view of areas of fill or alterations to streams and other waters. See Attachment #9
- c. North arrow, scale, property boundaries. See Attachment #10
- d. Include wetland delineation boundary (if applicable). Label all wetlands (jurisdictional, isolated and exempt) as I-1, I-2, I-3, etc. and the mitigation areas as M-1, M-2, etc. See Attachment #7 and #8
- e. Location of all surface waters, including wetlands, erosion control measures, existing and proposed structures, fill and excavation locations, disposal area for excavated material, including quantities, and wetland mitigation site (if applicable). See Attachments #11
- f. Approximate water depths and bottom configurations (if applicable).

**7. Supplemental Application Materials (*applicants must provide the following*)**

- a. A wetland delineation of all wetlands on the project site (for projects with wetland impacts). See Attachment #8
- b. At least three photographs of the project site. Indicate the photo locations on the project plans. See Attachment #7
- c. If isolated wetlands are present, a letter from the Corps of Engineers verifying this statement. See Attachment #12
- d. Wetland mitigation plan and monitoring report. See Attachment #13
- e. Classification of all isolated wetlands on the tract (if isolated wetlands are present onsite).
- f. Copies of all applicable local permits and/or resolutions pertaining to the project or tract.
- g. Tract history (see instructions).

**8. Additional information that MAY be required (*IDEM will notify you if needed*)**

- a. Erosion control and/or storm water management plans.
- b. Sediment analysis.
- c. Species surveys for fish, mussels, plants and threatened or endangered species.
- d. Stream habitat assessment. See Attachment #14
- e. Any other information IDEM deems necessary to review the proposed project. Attachment #15

## 9. Permitting Requirements

a. Does this project require the issuance of a Department of the Army Section 404 Permit from the US Army Corps of Engineers? Yes No

If no, you do not need to answer Part b.

b. Have you applied for an Army Corps of Engineers Section 404 permit? Yes No

If yes, please supply the Corps of Engineers ID Number, the Corps of Engineers District, the project manager, and a copy of any correspondence with the Corps. **If no, contact** the Army Corps of Engineers regarding the possible need for a permit application.

c. Have you applied for, received, or been denied a permit from the Department of Natural Resources for this project? Yes No

Please give the permit name, permit number, and date of application, issuance or denial..

d. Have you applied for, received, or been denied any other federal, state, or local permits, variances, licenses, or certifications for this project?

Yes No

Please give the permit name, agency from which it was obtained, permit number, and date of issuance or denial.

## 10. Adjoining Property Owners and Addresses

List the names and addresses of landowners adjacent to the property on which your project is located and the names and addresses of other persons (or entities) potentially affected by your project. Use additional sheet(s) if required.

Name Address City State ZIP Code	Name Address City State ZIP Code
Name Address City State ZIP Code	Name Address City State ZIP Code
Name Address City State ZIP Code	Name Address City State ZIP Code
Name Address City State ZIP Code	Name Address City State ZIP Code
Name Address City State ZIP Code	Name Address City State ZIP Code
Name Address City State ZIP Code	Name Address City State ZIP Code

### 11. Signature - Statement of Affirmation

I certify that I am familiar with the information contained in this application and, to the best of my knowledge and belief, such information is true and accurate. I certify that I have the authority to undertake and will undertake the activities as described in this application. I am aware that there are penalties for submitting false information. I understand that any changes in project design subsequent to IDEM's granting of authorization to discharge to a water of the state are not authorized and I may be subject to civil and criminal penalties for proceeding without proper authorization. I agree to allow representatives of the IDEM to enter and inspect the project site. I understand that the granting of other permits by local, state, or federal agencies does not release me from the requirement of obtaining the authorization requested herein before commencing the project.

Applicant's Signature:



Date:

9/14/07

(mm/dd/yyyy)

Print Name:

Richard L. Phyllbaum

Title:

Environment Permit  
Supervisor

## Worksheet – Summary of Onsite Water Resources and Project Impacts

A. Jurisdictional Wetlands (Existing Conditions)				Jurisdictional Wetlands (Proposed Impacts)				
Wetland Type			Size of wetland (acreage)	To be Impacted?		Acreage	Fill quantity (cys)	ATF
EM	SS	FO		Yes	No			
EM	SS	FO		Yes	No			
EM	SS	FO		Yes	No			
EM	SS	FO		Yes	No			
EM	SS	FO		Yes	No			
EM	SS	FO		Yes	No			
EM	SS	FO		Yes	No			

Describe the type and composition of fill material to be placed in wetlands on the project site:

Describe the type and composition and quantity (cubic yards) of material proposed to be dredged or excavated from wetlands on the project site:

B. Isolated Wetlands (Existing Conditions)						Isolated Wetlands (Proposed Impacts)				
Wetland Class			Type		Size of wetland (acreage)	To be Impacted?		Acreage	Fill quantity (cys)	ATF
1	2	3	NF	F		Yes	No			
1	2	3	NF	F		Yes	No			
1	2	3	NF	F		Yes	No			
1	2	3	NF	F		Yes	No			
1	2	3	NF	F		Yes	No			
1	2	3	NF	F		Yes	No			

Describe the type and composition of fill material to be placed in isolated wetlands on the project site:

Describe the type and composition and quantity (cubic yards) of material proposed to be dredged or excavated from isolated wetlands on the project site:

### C. Bridges and Stream Crossings - provide the following information for EACH structure *(Use additional sheet(s) if required)*

Stream name:

Description of impacts:

Length of upstream bank impacts:

Left side:

Right side:

Length of downstream bank impacts:

Left side:

Right side:

Bank protection fill placed below the Ordinary High Water Mark:

Volume per running foot:

Bank protection fill placed below the Ordinary High Water Mark:

Area of coverage:

**D. Bank Stabilization – provide the following information for EACH segment (Use additional sheet(s) if required)**

Water body name:

Description of impacts:

Length of shoreline or bank protection:

Volume (cubic yards) of bank protection fill placed below the Ordinary High Water Mark per running foot:

Area (square feet) of bank protection fill placed below the Ordinary High Water Mark:

**E. Stream Relocation**

Water body name:

Description of impacts:

Length of existing channel to be relocated: (linear feet)

Length of new channel to be constructed: (linear feet)

Existing channel to be backfilled:

Yes      No

Type of relocation:

Piping

Open Channel

Other: \_\_\_\_\_

Type of fill and volume: (cubic yards)

**F. Open Water Fill**

Water body name:

Description of impacts:

Area of water body to be filled: (acres)

Type of fill and volume: (cubic yards)

# Notes and Instructions for Authorization to Discharge Dredged or Fill Material to a State Regulated Wetland and/or Waters of the State Permit Application Form and Worksheet

## **Note to applicants:**

This form is to be used by all persons who intend to discharge dredged or fill materials into wetlands, isolated wetlands, or any other water body regulated under state and federal law. Specifically, this form is to be used for the following:

1. Application for Section 401 Water Quality Certification for any project not covered by the Indiana Regional General Permit
2. Application for a State Regulated Wetland Permit authorized under HEA 1798 and HEA 1277, excluding any activities authorized under any of the State Regulated Wetland General Permits

Consult the Office of Water Quality Web site for information on the types of authorizations and requirements for projects regulated under these laws "

<http://www.in.gov/idem/water/planbr/401/401home.html>

Do not submit this form until you are familiar with the various authorizations and proper forms for obtaining these authorizations. An application submitted on the incorrect form may result in delays in processing.

Applicants should also contact the Indiana Department of Natural Resources (DNR) regarding potential permit requirements associated with construction in a floodway or a public freshwater lake. You can reach the DNR Division of Water at (317) 232-4160 or toll free at (877) WATER-55.

## **Instructions for Completing the Application and Worksheet**

**Address all applications or questions to:**

Indiana Department of Environmental Management  
Office of Water Quality  
Section 401 Water Quality Certification/State Isolated Wetlands Program  
100 North Senate  
Indianapolis, Indiana 46204

Telephone: (800) 451-6027 or (317) 233-8488

*Print clearly or type*

*Attach additional 8.5" x 11" sheets as necessary*

## **APPLICATION**

**Note:** Some wetland activities may impact both U.S. navigable waters and state regulated isolated wetlands. In those situations, the project will require a Section 401 Water Quality Certification and Section 404 U.S. Corps of Engineers permit AND approval under the new State Isolated Wetland Regulatory Program. When IDEM receives an application that involves an activity that may impact both intrastate navigable waters and a state regulated wetland, current state law requires that we evaluate each activity using different authorities. IDEM will, at the request of an applicant, evaluate a project with multi-jurisdictional wetlands under the Section 401 certification framework and will provide one authorization for the project, applying the state regulated isolated wetlands law and federal Clean Water Act Section 401 authorities. If an applicant prefers that all IDEM approvals occur within one streamlined review process, a separate letter specifically requesting a combined review of the entire project should be submitted concurrently with the application.

### **Block 1 - Applicant Information**

Provide your name, address, and telephone number. You MUST provide a contact name. For complex projects or projects with multiple contractors and responsible parties, designation of a single point of contact will speed up the review process and enable more timely responses to requests for information.

### **Block 2 - Agent Information**

If you choose to be represented by an agent, provide the agent's address and telephone information. You are not required to have an agent.

### **Block 3 - Project Location**

Provide specific information relating to the location of your proposed project. Provide accurate maps depicting the project location. Try to keep detail on maps to a minimum, focusing instead on the location of structures and associated water bodies. Consult the USGS Quadrangle maps for information on the quarter, section, township and range of the project. IDEM may require that you submit full size plans to supplement the 8 1/2" by 11" map sheets if the project is large or complex.

### **Block 4 - Project Purpose and Description**

Provide the proposed or actual start date and the anticipated completion date. If you have started your project before obtaining authorization, you may be in violation of federal and/or state law. Give a narrative description of the proposed project. You should include any supplemental environmental reports, assessments, or other documents that explain or justify the proposed configuration of the project. Describe the purpose of the project (that is, what goal or outcome will be met by the construction of the project).

### **Block 5 - Avoidance, Minimization, and Mitigation Information**

You must describe possible alternatives to the proposed project that would avoid impacts to the aquatic resource that were considered during the project planning process. You must also describe ways to minimize impacts considered during the project planning process, including a description of how you plan to contain any dredged/excavated material to prevent re-entry into waterways or wetlands. Examples of alternatives include construction on the upland portions of the property; rerouting a roadway to avoid a wetland; or alternate design plans. Minimization of the impacts may decrease any mitigation requirements that might otherwise apply. Minimization may include reduction of the amount of dredging, filling, or vegetative clearing. For isolated wetlands only, enclosure of a copy of (1) a resolution of the executive of the county or municipality in which the wetland is located or (2) a permit or other approval from a local government entity having authority over the proposed use of the property on which the wetland is located; that includes a specific finding that the wetland activity is part of a legitimate use proposed by the applicant on the property, substitutes for the information required on avoidance and minimization.

Answer all the questions in detail, providing example, drawings, or other supporting information to illustrate the steps taken to consider alternatives. Provide reasons why various alternatives were or were not considered.

In general, all impacts to wetlands or other waters that require the use of this form will require some form of compensatory mitigation. A detailed description of the mitigation plan must be provided, including: the location of the mitigation site, the size and type of mitigation to be performed, the construction sequence, timing of the mitigation, information on post construction monitoring, mitigation techniques, and success criteria of the mitigation site. A mitigation plan, with overview drawings, planting lists, cross sectional views, and other relevant information is recommended as a supplement to answer this question.

#### **Block 6 - Drawing/Plan Requirements**

You must submit drawings/plans that are on 8 1/2 by 11 inch sheets. Your project will be delayed if these materials are not submitted in the formats specified in the application.

#### **Block 7 "Supplemental Application Materials"**

All projects involving impacts to wetlands must be accompanied by a wetland delineation using the procedures established in the U.S. Army Corps of Engineers Wetland Delineation Manual, Technical Report Y-87-1 (January 1987). This delineation must be approved or reviewed by the Corps of Engineers in order for IDEM to determine the impacts to water bodies associated with the project. DO NOT submit an application involving impacts to wetlands without a wetland delineation. For projects that involve impacts to isolated wetlands, a letter from the Corps of Engineers that specifically makes this determination must be provided or the application will not be processed. Submittal of photographs depicting the project site is highly encouraged. Photos must be clearly labeled with the direction of the shot, the area depicted, and notes on relevant features. A map depicting the location of photos on the project site is also useful and should be included whenever photos are submitted.

For project sites with isolated wetlands, a tract history is also required. This history provides information on all the wetlands on the site prior to January 1, 2004, and describes any and all activities within these wetlands, including impacts allowed to wetlands exempt from regulation under the various provisions of federal and state law. Direct questions regarding this requirement to IDEM staff for clarification.

#### **Block 8 - Additional Information That May Be Required**

You are not required to submit the information specified in this section unless directed to do so by IDEM. However, you may submit the information if you anticipate that such information will be required. For example, if you are aware of issues on the proposed project site which may impact water resources, such as the presence of contaminated soils or sediments, endangered species, well field protection areas, or previously permitted activities on the project site, information regarding these points must be submitted with the certification application.

#### **Block 9 - Permitting Requirements**

Provide information regarding your application to the Corps of Engineers. If you have not yet contacted the Corps of Engineers, you must do so as soon as possible (SEE BLOCK 7). Provide information regarding any other federal, state, or local permits, variances, licenses, or certifications required for your project. Please indicate whether they were approved, denied, or are pending.

#### **Block 10 - Adjoining Property Owners and Addresses**

List the names and addresses of landowners adjacent to the property on which your project is located. Adjacent property owners are persons who share property lines with your property. Inclusion of names and addresses of other persons (or entities) potentially affected by your project must include persons within your neighborhood, lake association, or in the general vicinity that may have an interest in your project. Consult with IDEM for further clarification.

#### **Block 11 - Signature - Statement of Affirmation**

You must sign and date the application. If the applicant is a corporation, a responsible person from that corporation must sign. No other signatures will be accepted. The application will not be processed without the appropriate signature.

### **WORKSHEET**

**Note:** When calculating any type of impact, all areas that are affected by placement of fill, bank armoring, culverting, excavation, or any other activity must be counted. When calculating open water impact, all areas within lakes, rivers, streams and the like must be counted. This includes areas under new bridge piers, beaches, and boat ramps, as examples. The Ordinary High Water Mark means that line on the shore of a water body established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, natural destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

**- Fill out only the sections of this worksheet that apply to your project -**

#### **Section A - Wetlands**

This section is for wetlands determined to be under the jurisdiction of the U.S. Army Corps of Engineers (Corps) and that require a Section 404 permit as well as a Section 401 Water Quality Certification from IDEM. List the type of wetland as Emergent (EM), Scrub shrub (SS), or Forested (FO). "Emergent wetland" means a wetland characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. "Scrub shrub wetland" means a wetland dominated by woody vegetation having a height greater than three and two-tenths (3.2) feet, and a stem diameter less than three (3) inches. This includes true shrubs, young trees, and trees and shrubs stunted by environmental conditions. "Forested wetland" means a wetland dominated by woody vegetation that has a diameter, at breast height, greater than three (3) inches, regardless of total height. The size of the wetland must be determined by conducting a wetland delineation consistent with the protocols established in the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual. The applicant must list whether or not the wetland will be impacted, the acreage of the impact, and the quantity of fill to be discharged into the wetland. The applicant must identify whether or not this is an after-the-fact (ATF) permit. An ATF permit is for impacts to wetlands or other water bodies under the jurisdiction of IDEM that did not receive authorization before the impacts occurred. Additionally, the applicant must describe the type and composition of material proposed to be discharged or removed from the wetland.

#### **Section B - Isolated Wetlands**

This section is for wetlands the Corps has determined to be isolated and no longer under their jurisdiction. The Corps jurisdictional determination letter must be included with the application. Isolated wetlands are considered State Regulated Wetlands and proposed impacts to these wetlands will be reviewed pursuant to IC 13-18-22. The class of wetland must be determined by the definitions outlined in IC-13-11-2-25.8. This is determined by assessing the vegetation type, hydrologic function, habitat functions, values of the wetland, and disturbances to the wetland. The applicant must determine the type of wetland by designating the wetland as either Non-Forested (NF) or Forested (F). The size of the wetland must be determined by conducting a wetland delineation consistent with the protocols established in the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual. The applicant must list whether or not the wetland will be

impacted, the acreage of the impact, and the quantity of fill to be discharged into the wetland. The applicant must identify whether or not this is an after-the-fact (ATF) permit. An ATF permit is for impacts to wetlands or other water bodies under the jurisdiction of IDEM that did not receive authorization before the impacts occurred. Additionally, the applicant must describe the type and composition of material proposed to be discharged or removed from the wetland.

#### ***Section C - Bridges and Stream Crossings***

This section is for projects that impact streams in order to construct, maintain, or protect structures used to cross the stream. The applicant must list the name of the stream to be impacted by the proposed project. The stream name can be found on the USGS Topographic map. If the stream does not have a name, identify it as a tributary to the next stream or water body with a name. Describe the proposed impacts in detail. Include the lengths of bank impacts to both banks upstream and downstream. Determination of left and right banks is made in the following manner- at the point furthest upstream on the project site, face downstream - the left bank is on your left and the right bank is on your right. Identify the volume per running foot of material to be discharged below the Ordinary High Water Mark (OHWM). Identify the total area below the OHWM to receive a discharge of fill material.

#### ***Section D - Bank Stabilization***

This section is for projects that discharge fill material in order to stabilize eroding land along streams, lakes, or other water bodies. The applicant must list the name of the water body to be impacted by the proposed project. The name of the water body can be found on the USGS Topographic map. If the water body does not have a name, identify it as a tributary to the next stream or water body with a name. Provide the length of shoreline or bank impact. Identify the volume per running foot of material to be discharged below the Ordinary High Water Mark (OHWM). Identify the total area below the OHWM to receive a discharge of fill material.

#### ***Section E - Stream Relocation***

This section is for projects that propose to relocate a stream from its existing banks either by open channel construction or by stream piping. The applicant must list the name of the stream to be impacted by the proposed project. The stream name can be found on the USGS Topographic map. If the stream does not have a name, identify it as a tributary to the next stream or water body with a name. Describe the impacts to the stream. Provide the linear feet of existing channel to be relocated and the length of new channel to be constructed. The applicant must state whether the old channel is proposed to be filled and describe the type and quantity of fill to be used to fill the old channel. The applicant must also provide the type of relocation "new channel or piping.

#### ***Section F - Open Water Fill***

This is for projects where the fill material extends beyond the edge of the shoreline into open water. Some examples include the filling of pit mines, borrow pits, and other land reclamation projects. Provide the name of the water body to be impacted. If the water body does not have a name, identify it as unnamed open water body. Describe the impacts to the water body including the area to be filled and the type and quantity of fill material to be discharged.



# **401 WQC APPLICATION ATTACHMENT #1**

## **Wetland Impacts**

## Wetland Impact Areas

A. Jurisdictional Wetlands (Existing Conditions)		Jurisdictional Wetlands (Proposed Impacts)			
Wetland Type	Size of wetland (acreage)	To be Impacted?	Acreage	Fill quantity (cys)	ATF
<input type="checkbox"/> EM <input type="checkbox"/> SS <input checked="" type="checkbox"/> FO	Wetland #1 – 0.06 acre	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.02 ac	50 cys	
<input checked="" type="checkbox"/> EM <input type="checkbox"/> SS <input type="checkbox"/> FO	Wetland #2 – 0.01 acre	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.01 ac	31 cys	
<input checked="" type="checkbox"/> EM <input type="checkbox"/> SS <input type="checkbox"/> FO	Wetland #3 – 0.23 acre	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.14 ac	241 cys	
<input checked="" type="checkbox"/> EM <input type="checkbox"/> SS <input type="checkbox"/> FO	Wetland #4 – 0.33 acre	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.26 ac	2,870 cys	
<input checked="" type="checkbox"/> EM <input type="checkbox"/> SS <input type="checkbox"/> FO	Wetland #5 – 0.07 acre	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.07 ac	60 cys	
<input checked="" type="checkbox"/> EM <input type="checkbox"/> SS <input type="checkbox"/> FO	Wetland #6 – 0.11 acre	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.06 ac	120 cys	
<input checked="" type="checkbox"/> EM <input type="checkbox"/> SS <input type="checkbox"/> FO	Wetland #7 – 0.12 acre	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.05 ac	50 cys	
<input checked="" type="checkbox"/> EM <input type="checkbox"/> SS <input type="checkbox"/> FO	Wetland #8 – 0.19 acre	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.16 ac	1,500 cys	
<input checked="" type="checkbox"/> EM <input type="checkbox"/> SS <input type="checkbox"/> FO	Wetland #9 – 0.19 acre	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.16 ac	1,500 cys	
<input checked="" type="checkbox"/> EM <input type="checkbox"/> SS <input type="checkbox"/> FO	Wetland #10 – 0.09 acre	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.09 ac	1,000 cys	
<input checked="" type="checkbox"/> EM <input type="checkbox"/> SS <input type="checkbox"/> FO	Wetland #11 – 1.90 acres	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.09 ac	1,200 cys	
<input checked="" type="checkbox"/> EM <input type="checkbox"/> SS <input type="checkbox"/> FO	Wetland #12 – 0.07 acre	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	0.07 ac	950 cys	
Describe the type and composition of fill material to be placed in wetlands on the project site:					
Earth embankment fill suitable for roadway construction will be placed into the wetland areas					
Describe the type and composition and quantity (cubic yards) of material proposed to be dredged or excavated from wetlands on the project site:					
No material is proposed to be dredged from these wetland areas.					

# **401 WQC APPLICATION ATTACHMENT #2**

## **Stream Crossing Impacts**

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name Barn Branch Creek – Stream Impact #1 (Stream ID Sec 1-s02r01)		
Description of Impacts 125 feet of this stream will be placed into box culvert and 28 feet on both ends of the culvert will receive riprap. (Total Impact Below OHWM – 0.04 acre)		
Length of Upstream Impacts		
Left Side: 112 feet		Right Side: 112 feet
Length of Downstream Impacts		
Left Side: 69 feet		Right Side: 69 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.44 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 1,232 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name Tributary to Pigeon – Stream Impact #2 (Stream ID Sec 1-s04)		
Description of Impacts 385 feet of this stream will be placed into a 3-sided box culvert and 21.5 feet on both ends of the culvert will receive riprap. (Total Impacts Below OHWM – 0.05 acre)		
Length of Upstream Impacts		
Left Side: 214 feet		Right Side: 214 feet
Length of Downstream Impacts		
Left Side: 214 feet		Right Side: 214 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 1.27 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 1,300 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name Tributary to Pigeon Creek – Stream Impact #4 (Stream ID Sec 1-s07)		
Description of Impacts 70 feet of this stream will be placed into a concrete arch culvert and 28 feet on both ends of the culvert will receive riprap. (Total Impacts Below OHWM – 0.01 acre)		
Length of Upstream Impacts		
Left Side: 63 feet		Right Side: 63 feet
Length of Downstream Impacts		
Left Side: 63 feet		Right Side: 63 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 1.0 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 1,359 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name Barn Branch Creek – Stream Impact #5 (Stream ID Sec 1-s02r04)		
Description of Impacts 84 feet of this stream will be placed into a 3-sided box culvert and 24.5 feet on both ends of the culvert will receive riprap (Total Impacts Below OHWM – 0.02 acre)		
Length of Upstream Impacts		
Left Side: 66.5 feet		Right Side: 66.5 feet
Length of Downstream Impacts		
Left Side: 66.5 feet		Right Side: 66.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 1.1 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 798 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name Barn Branch Creek – Stream Impact #6 (Stream ID Sec 1-s02r04)		
Description of Impacts 210 feet of this stream will be placed into a 3-side box culvert and 460 feet of this stream will be regraded (Total Impacts Below OHWM – 0.09 acre)		
Length of Upstream Impacts	Left Side: 240 feet	Right Side: 240 feet
Length of Downstream Impacts	Left Side: 430 feet	Right Side: 430 feet
Bank protection fill placed below the Ordinary High Water Mark:	Volume Per Running Foot: 1.6 cubic yard / linear foot	
Bank protection fill placed below the Ordinary High Water Mark:	Area of Coverage: 11,237 square feet	

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name Barn Branch Creek – Stream Impact #7 (Stream ID Sec 1-s02r04)		
Description of Impacts 213 feet of this stream will be placed into a box culvert and 43.5 feet on both ends of the culvert will receive riprap. (Total Impacts Below OHWM – 0.04 acre)		
Length of Upstream Impacts	Left Side: 155 feet	Right Side: 155 feet
Length of Downstream Impacts	Left Side: 145 feet	Right Side: 145 feet
Bank protection fill placed below the Ordinary High Water Mark:	Volume Per Running Foot: 1.6 cubic yards / linear foot	
Bank protection fill placed below the Ordinary High Water Mark:	Area of Coverage: 1,800 square feet	

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name Tributary to Pigeon Creek – Stream Impact #8 (Stream ID Sec 1-s08)		
Description of Impacts 354 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below OHWM – 0.05 acre)		
Length of Upstream Impacts	Left Side: 212 feet	Right Side: 212 feet
Length of Downstream Impacts	Left Side: 212 feet	Right Side: 212 feet
Bank protection fill placed below the Ordinary High Water Mark:	Volume Per Running Foot: 0.5 cubic yards / linear foot	
Bank protection fill placed below the Ordinary High Water Mark:	Area of Coverage: 2,120 square feet	

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name Tributary to Pigeon Creek – Stream Impact #9 (Stream ID Sec 1-s09)		
Description of Impacts 315 feet of this stream will be placed into a culvert and 35 feet on both ends of the culvert will receiver riprap (Total Impacts Below OHWM – 0.04 acre)		
Length of Upstream Impacts	Left Side: 192.5 feet	Right Side: 192.5 feet
Length of Downstream Impacts	Left Side: 192.5 feet	Right Side: 192.5 feet
Bank protection fill placed below the Ordinary High Water Mark:	Volume Per Running Foot: 0.5 cubic yards / linear foot	
Bank protection fill placed below the Ordinary High Water Mark:	Area of Coverage: 1,925 square feet	

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Tributary to Pigeon Creek – Stream Impact #10 (Stream ID Sec 1-s10)		
Description of Impacts		
255 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below OHWM – 0.01 acre)		
Length of Upstream Impacts		
Left Side: 162.5 feet		Right Side: 162.5 feet
Length of Downstream Impacts		
Left Side: 162.5 feet		Right Side: 162.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.1 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 325 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Tributary to Pigeon Creek – Stream Impact #11 (Stream ID Sec 1-s11)		
Description of Impacts		
460 feet of this stream will be crossed by two bridges on the interstate and one new bridge on CR 550. Riprap will be placed below the bridges to prevent scouring and stream bank erosion (Total Impact Below OHWM – 0.07 acre)		
Length of Upstream Impacts		
Left Side: 230 feet		Right Side: 230 feet
Length of Downstream Impacts		
Left Side: 230 feet		Right Side: 230 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.7 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 2,695 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Pigeon Creek – Stream Impact #12 (Stream ID Sec 1-s12)		
Description of Impacts		
385 feet of this stream will be crossed by two bridges. Riprap will be placed below the bridges to prevent scouring and stream bank erosion (Total Impact Below the OHWM – 0.19 acre)		
Length of Upstream Impacts		
Left Side: 192.5 feet		Right Side: 192.5 feet
Length of Downstream Impacts		
Left Side: 192.5 feet		Right Side: 192.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 1.6 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 8,085 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Tributary to Pigeon Creek – Stream Impact #13 (Stream ID Sec 1-s13r02 and Sec 1-s13r01)		
Description of Impacts		
860 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.17 acre)		
Length of Upstream Impacts		
Left Side: 465 feet		Right Side: 465 feet
Length of Downstream Impacts		
Left Side: 465 feet		Right Side: 465 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.7 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 7,440 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name	
Tributary to Pigeon Creek – Stream Impact #14 (Stream ID Sec 1-s14)	
Description of Impacts 470 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.06 acre)	
Length of Upstream Impacts	
Left Side: 270 feet	Right Side: 270 feet
Length of Downstream Impacts	
Left Side: 270 feet	Right Side: 270 feet
Bank protection fill placed below the Ordinary High Water Mark:	Volume Per Running Foot: 0.7 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:	Area of Coverage: 2,700 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name	
Tributary to Smith Creek – Stream Impact #15 (Stream ID Sec 1-s15r02)	
Description of Impacts 380 feet of this stream will be crossed with two bridges on the interstate. Riprap will be place below the bridges to prevent scouring and stream bank erosion. (Total Impacts Below the OHWM – 0.02 acre)	
Length of Upstream Impacts	
Left Side: 190 feet	Right Side: 190 feet
Length of Downstream Impacts	
Left Side: 190 feet	Right Side: 190 feet
Bank protection fill placed below the Ordinary High Water Mark:	Volume Per Running Foot: 0.3 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:	Area of Coverage: 950 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name	
Tributary of Smith Creek – Stream Impact #16 (Stream ID Sec 1-s16r01)	
Description of Impacts 495 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.10 acre)	
Length of Upstream Impacts	
Left Side: 282.5 feet	Right Side: 282.5 feet
Length of Downstream Impacts	
Left Side: 282.5 feet	Right Side: 282.5 feet
Bank protection fill placed below the Ordinary High Water Mark:	Volume Per Running Foot: 0.6 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:	Area of Coverage: 2,119 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name	
Tributary of Smith Creek – Stream Impact #18 (Stream ID Sec 1-s18r01)	
Description of Impacts 125 feet of this stream will be placed into a box culvert. (Total Impacts Below the OHWM – 0.01 acre)	
Length of Upstream Impacts	
Left Side: 62.5 feet	Right Side: 62.5 feet
Length of Downstream Impacts	
Left Side: 62.5 feet	Right Side: 62.5 feet
Bank protection fill placed below the Ordinary High Water Mark:	Volume Per Running Foot: 0.4 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:	Area of Coverage: 375 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Tributary of Smith Creek – Stream Impact #19 (Stream ID Sec 1-s18r02)		
Description of Impacts 205 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.02 acre)		
Length of Upstream Impacts		
Left Side: 137.5 feet		Right Side: 137.5 feet
Length of Downstream Impacts		
Left Side: 137.5 feet		Right Side: 137.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.4 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 825 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Tributary to Smith Creek – Stream Impact #21 (Stream ID Sec 1-s20r01 and Sec 1-s20r02)		
Description of Impacts 685 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.17 acre)		
Length of Upstream Impacts		
Left Side: 377.5 feet		Right Side: 377.5 feet
Length of Downstream Impacts		
Left Side: 377.5 feet		Right Side: 377.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.9 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 7,550 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Tributary to Smith Creek – Stream Impact #24 (Stream ID Sec 1-s25r01)		
Description of Impacts 590 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.18 acre)		
Length of Upstream Impacts		
Left Side: 330 feet		Right Side: 330 feet
Length of Downstream Impacts		
Left Side: 330 feet		Right Side: 330 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 1.0 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 7,920 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Halfmoon Ditch – Stream Impact #25 (Stream ID Sec 1-s27)		
Description of Impacts 380 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.12 acre)		
Length of Upstream Impacts		
Left Side: 225 feet		Right Side: 225 feet
Length of Downstream Impacts		
Left Side: 225 feet		Right Side: 225 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 1.0 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 5,400 square feet



**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Tributary to Halfmoon Ditch – Stream Impact #27 (Stream ID Sec 1-s30r03)		
Description of Impacts 395 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.13 acre)		
Length of Upstream Impacts		
Left Side: 232.5 feet		Right Side: 232.5 feet
Length of Downstream Impacts		
Left Side: 232.5 feet		Right Side: 232.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 1.0 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 5,580 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Tributary to Halfmoon Ditch – Stream Impact #28 (Stream ID Sec 1-s31)		
Description of Impacts 845 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.08 acre)		
Length of Upstream Impacts		
Left Side: 457.5 feet		Right Side: 457.5 feet
Length of Downstream Impacts		
Left Side: 457.5 feet		Right Side: 457.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.4 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 3,660 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Tributary of West Fork Keg Creek – Stream Impact #30 (Stream ID Sec 1-s35)		
Description of Impacts 190 feet of this stream will be placed into a box culvert and 35 feet on the west end of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.01 acre)		
Length of Upstream Impacts		
Left Side: 130 feet		Right Side: 130 feet
Length of Downstream Impacts		
Left Side: 130 feet		Right Side: 130 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.2 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 520 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Tributary to West Fork Keg Creek – Stream Impact #31 (Stream ID Sec 1-s36r02)		
Description of Impacts 66 feet of this stream will be placed into a box culvert (Total Impacts Below the OHWM – 0.01 acre)		
Length of Upstream Impacts		
Left Side: 33 feet		Right Side: 33 feet
Length of Downstream Impacts		
Left Side: 33 feet		Right Side: 33 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.2 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 132 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name Tributary to West Fork Keg Creek – Stream Impact #32 (Stream ID Sec 1-s36r01)		
Description of Impacts 155 feet of this stream will be placed into a box culvert and 35 feet on the east end will receive riprap. (Total Impacts Below the OHWM – 0.01 acre)		
Length of Upstream Impacts		
Left Side: 112.5 feet		Right Side: 112.5 feet
Length of Downstream Impacts		
Left Side: 112.5 feet		Right Side: 112.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.2 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 450 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name Tributary to West Fork Keg Creek – Stream Impact #33 (Stream ID Sec 1-s37)		
Description of Impacts 425 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.01 acre)		
Length of Upstream Impacts		
Left Side: 247.5 feet		Right Side: 247.5 feet
Length of Downstream Impacts		
Left Side: 247.5 feet		Right Side: 247.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.1 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 495 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name West Fork Keg Creek – Stream Impact #34 (Stream ID Sec 1-s39)		
Description of Impacts 385 feet of this stream will be crossed with two bridges on the interstate. Riprap will be placed below the bridges to prevent scouring and stream bank erosion. (Total Impacts Below the OHWM – 0.08 acre)		
Length of Upstream Impacts		
Left Side: 192.5 feet		Right Side: 192.5 feet
Length of Downstream Impacts		
Left Side: 192.5 feet		Right Side: 192.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.8 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 3,465 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name Tributary to West Fork Keg Creek – Stream Impact #35 (Stream ID Sec 1-s44)		
Description of Impacts 315 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.03 acre)		
Length of Upstream Impacts		
Left Side: 192.5 feet		Right Side: 192.5 feet
Length of Downstream Impacts		
Left Side: 192.5 feet		Right Side: 192.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.2 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 1,155 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Tributary to West Fork Keg Creek – Stream Impact #36 (Stream ID Sec 1-s41)		
Description of Impacts		
315 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.03 acre)		
Length of Upstream Impacts		
Left Side: 192.5 feet		Right Side: 192.5 feet
Length of Downstream Impacts		
Left Side: 192.5 feet		Right Side: 192.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.2 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 1,155 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Tributary of Smith Creek – Stream Impact #37 (Stream ID Sec 1-s42)		
Description of Impacts		
315 feet of this stream will be placed into a box culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.05 acre)		
Length of Upstream Impacts		
Left Side: 192.5 feet		Right Side: 192.5 feet
Length of Downstream Impacts		
Left Side: 192.5 feet		Right Side: 192.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.5 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 2,310 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
Tributary to West Fork Keg Creek – Stream Impact #38 (Stream ID Sec 1-s43r01 and Sec 1-s43r02)		
Description of Impacts		
545 feet of this stream will be placed into a culvert and 35 feet on both ends of the culvert will receive riprap. (Total Impacts Below the OHWM – 0.08 acre)		
Length of Upstream Impacts		
Left Side: 307.5 feet		Right Side: 307.5 feet
Length of Downstream Impacts		
Left Side: 307.5 feet		Right Side: 307.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.4 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 3,690 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name		
West Fork Keg Creek – Stream Impact #39 (Stream ID Sec 1-s39r01)		
Description of Impacts		
385 feet of this stream will be crossed with a new bridge that will replace the existing bridge over W. Fork Keg Creek on SR 64. (Total Impacts Below the OHWM – 0.08 acre)		
Length of Upstream Impacts		
Left Side: 192.5 feet		Right Side: 192.5 feet
Length of Downstream Impacts		
Left Side: 192.5 feet		Right Side: 192.5 feet
Bank protection fill placed below the Ordinary High Water Mark:		
		Volume Per Running Foot: 0.8 cubic yards / linear foot
Bank protection fill placed below the Ordinary High Water Mark:		
		Area of Coverage: 3,465 square feet

**C. Bridges and Streams Crossing – Provide the following information for EACH structure (Use additional sheet(s) if required)**

Stream Name

West Fork Keg Creek – Stream Impact #40 (Stream ID Sec 1-s39r01)

Description of Impacts

110 feet of this stream will be placed into a culvert and 35 feet on both ends of the culvert will receive riprap.

(Total Impacts Below the OHWM – 0.04 acre)

Length of Upstream Impacts

Left Side: 90 feet

Right Side: 90 feet

Length of Downstream Impacts

Left Side: 90 feet

Right Side: 90 feet

Bank protection fill placed below the Ordinary High Water Mark:

Volume Per Running Foot: 0.8 cubic yards / linear foot

Bank protection fill placed below the Ordinary High Water Mark:

Area of Coverage: 1,620 square feet

# **401 WQC APPLICATION ATTACHMENT #3**

## **Stream Relocation Impacts**

## Stream Relocation Impacts

E. Stream Relocation	
Water body name: <b>Barn Branch Creek – Stream Impact #3 (Stream ID Sec 1-s04)</b>	
Description of impacts: <b>Approximately 400 feet of this stream (acting as a roadside ditch) will be relocated approximately 25 feet north</b>	
Length of existing channel to be relocated: (linear feet) <b>400 feet</b>	
Length of new channel to be constructed: (linear feet) <b>400 feet</b>	
Existing channel to be backfilled: <div style="text-align: right;"><input checked="" type="checkbox"/> Yes   <input type="checkbox"/> No</div>	Type of relocation: <div style="text-align: right;"><input type="checkbox"/> Piping   <input checked="" type="checkbox"/> Open Channel   <input type="checkbox"/> Other _____</div>
Type of fill and volume: (cubic yards) <b>Earth embankment fill suitable for roadway construction (126 cubic yards)</b>	

E. Stream Relocation	
Water body name: <b>Tributary to Smith Creek – Stream Impact #17 (Stream ID Sec 1-s17)</b>	
Description of impacts: <b>70 feet of this stream will be relocated into a roadside ditch</b>	
Length of existing channel to be relocated: (linear feet) <b>70 feet</b>	
Length of new channel to be constructed: (linear feet) <b>80 feet</b>	
Existing channel to be backfilled: <div style="text-align: right;"><input checked="" type="checkbox"/> Yes   <input type="checkbox"/> No</div>	Type of relocation: <div style="text-align: right;"><input type="checkbox"/> Piping   <input checked="" type="checkbox"/> Open Channel   <input type="checkbox"/> Other _____</div>
Type of fill and volume: (cubic yards) <b>Earth embankment material will be used to fill in the channel (67 cubic yards)</b>	

E. Stream Relocation	
Water body name: <b>Tributary to Smith Creek – Stream Impact #20 (Stream ID Sec 1-s19)</b>	
Description of impacts: <b>395 feet of this stream will be relocated into a roadside ditch</b>	
Length of existing channel to be relocated: (linear feet) <b>395 feet</b>	
Length of new channel to be constructed: (linear feet) <b>380 feet</b>	
Existing channel to be backfilled: <div style="text-align: right;"><input checked="" type="checkbox"/> Yes   <input type="checkbox"/> No</div>	Type of relocation: <div style="text-align: right;"><input type="checkbox"/> Piping   <input checked="" type="checkbox"/> Open Channel   <input type="checkbox"/> Other _____</div>
Type of fill and volume: (cubic yards) <b>Earth embankment material will be used to fill in the channel (132 cubic yards)</b>	

E. Stream Relocation	
Water body name: <b>Tributary to Smith Creek – Stream Impact #22 (Stream ID Sec 1-s21)</b>	
Description of impacts: <b>295 feet of this stream will be relocated into a roadside ditch</b>	
Length of existing channel to be relocated: (linear feet) <b>295 feet</b>	
Length of new channel to be constructed: (linear feet) <b>100 feet</b>	
Existing channel to be backfilled: <div style="text-align: right;"><input checked="" type="checkbox"/> Yes   <input type="checkbox"/> No</div>	Type of relocation: <div style="text-align: right;"><input type="checkbox"/> Piping   <input checked="" type="checkbox"/> Open Channel   <input type="checkbox"/> Other _____</div>
Type of fill and volume: (cubic yards) <b>Earth embankment material will be used to fill in the channel (160 cubic yards)</b>	

E. Stream Relocation	
Water body name: Tributary to Smith Creek – Stream Impact #23 (Stream ID Sec 1-s22)	
Description of impacts: 405 feet of this stream will be relocated into a roadside ditch	
Length of existing channel to be relocated: (linear feet) 405 feet	
Length of new channel to be constructed: (linear feet) 350 feet	
Existing channel to be backfilled: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Type of relocation: <input type="checkbox"/> Piping <input checked="" type="checkbox"/> Open Channel <input type="checkbox"/> Other _____
Type of fill and volume: (cubic yards) Earth embankment material will be used to fill in the channel (240 cubic yards)	

E. Stream Relocation	
Water body name: Tributary to Smith Creek – Stream Impact #26 (Stream ID Sec 1-s29)	
Description of impacts: 100 feet of this stream will be relocated into a roadside ditch	
Length of existing channel to be relocated: (linear feet) 100 feet	
Length of new channel to be constructed: (linear feet) 500 feet	
Existing channel to be backfilled: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Type of relocation: <input type="checkbox"/> Piping <input checked="" type="checkbox"/> Open Channel <input type="checkbox"/> Other _____
Type of fill and volume: (cubic yards) Earth embankment material will be used to fill in the channel (5 cubic yards)	

E. Stream Relocation	
Water body name: Tributary to Smith Creek – Stream Impact #29 (Stream ID Sec 1-s33)	
Description of impacts: 265 feet of this stream will be relocated into a roadside ditch	
Length of existing channel to be relocated: (linear feet) 265 feet	
Length of new channel to be constructed: (linear feet) 1,600 feet	
Existing channel to be backfilled: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Type of relocation: <input type="checkbox"/> Piping <input checked="" type="checkbox"/> Open Channel <input type="checkbox"/> Other _____
Type of fill and volume: (cubic yards) Earth embankment material will be used to fill in the channel (6 cubic yards)	

# **401 WQC APPLICATION ATTACHMENT #4**

**Open Water Impacts**



## Open Water Impacts

F. Open Water Fill
Water Body Name: Unnamed Private Pond – Pond ID Sec 1-w24
Description of impacts: Approximately 0.32 acre of this 0.39 acre pond will be filled in by this project
Area of water body to be filled: (acres) 0.32 acres
Type of fill and volume: (cubic yards) Earth embankment material will be used to fill in this pond (2,500 cys)

F. Open Water Fill
Water Body Name: Unnamed Private Pond – Pond ID Sec 1-w28
Description of impacts: The entire 0.15 acre pond will be filled in by this project
Area of water body to be filled: (acres) 0.15 acre
Type of fill and volume: (cubic yards) Earth embankment material will be used to fill in this pond (1,500 cys)

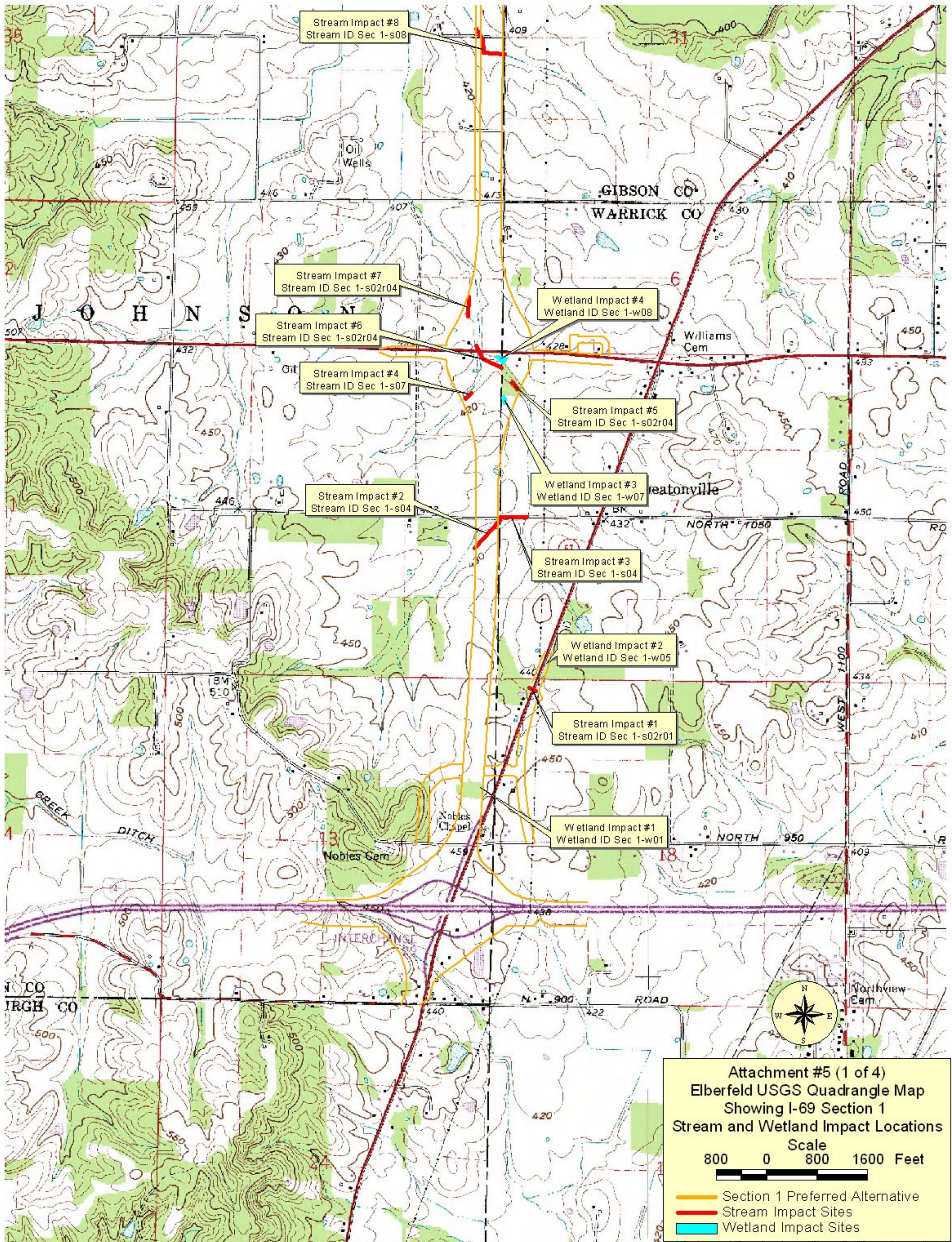
F. Open Water Fill
Water Body Name: Unnamed Private Pond – Pond ID Sec 1-p05
Description of impacts: Approximately 0.15 acre of this 0.97 acre pond will be filled in by this project.
Area of water body to be filled: (acres) 0.15 acre
Type of fill and volume: (cubic yards) Earth embankment material will be used to fill in this pond (1,200 cys)

F. Open Water Fill
Water Body Name: Unnamed Private Pond – Pond ID Sec 1-p07
Description of impacts: The entire 0.13 acre pond will be filled in by this project
Area of water body to be filled: (acres) 0.13 acre
Type of fill and volume: (cubic yards) Earth embankment material will be used to fill in this pond (950 cys)

# **401 WQC APPLICATION ATTACHMENT #5**

**Francisco and Elberfeld USGS  
Quadrangle Map Showing Project  
Location and Water Resource Impacts**





Stream Impact #8  
Stream ID Sec 1-s08

Stream Impact #7  
Stream ID Sec 1-s02r04

Stream Impact #6  
Stream ID Sec 1-s02r04

Stream Impact #4  
Stream ID Sec 1-s07

Stream Impact #2  
Stream ID Sec 1-s04

Wetland Impact #4  
Wetland ID Sec 1-w08

Stream Impact #5  
Stream ID Sec 1-s02r04

Wetland Impact #3  
Wetland ID Sec 1-w07

Stream Impact #3  
Stream ID Sec 1-s04

Wetland Impact #2  
Wetland ID Sec 1-w05

Stream Impact #1  
Stream ID Sec 1-s02r01

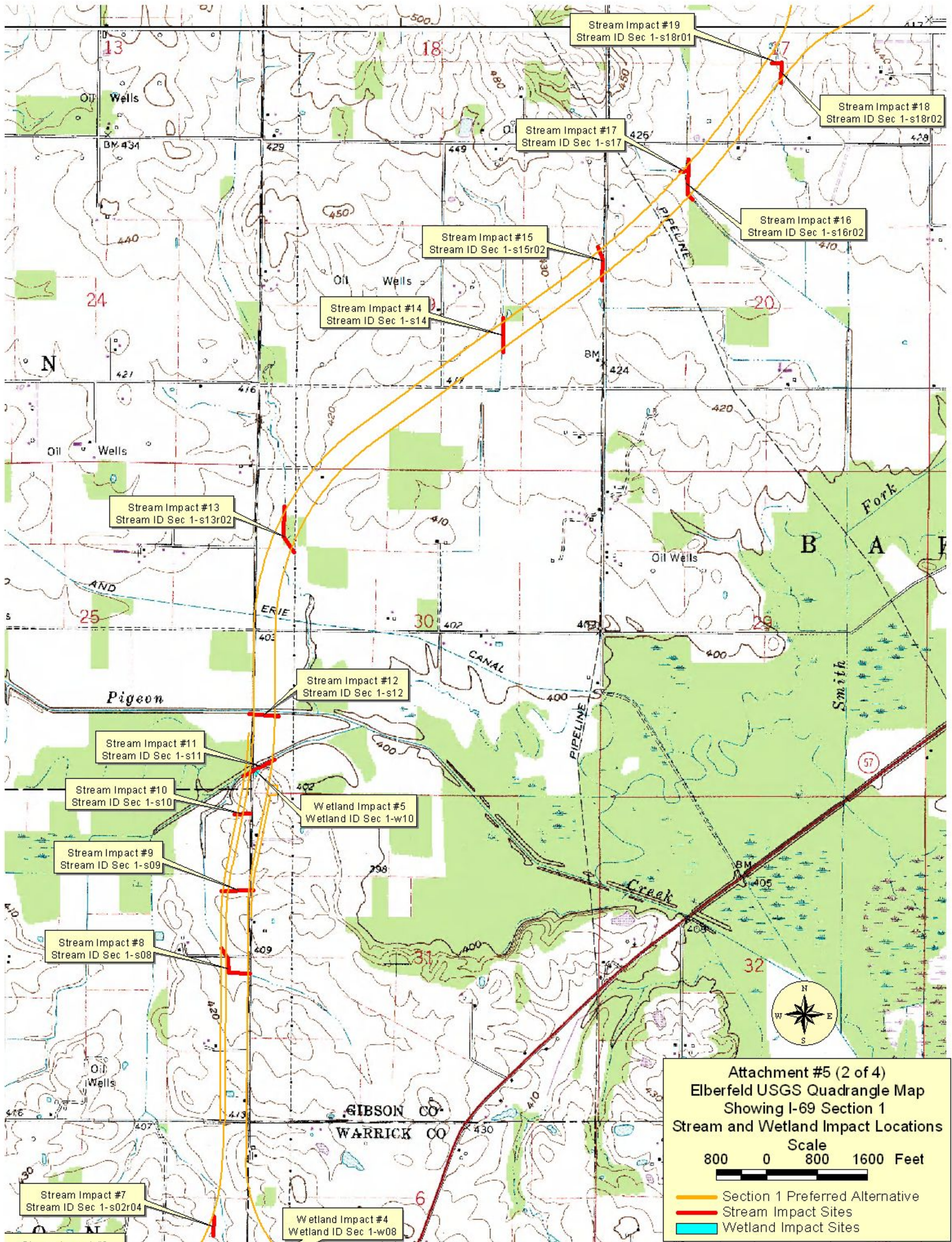
Wetland Impact #1  
Wetland ID Sec 1-w01

Attachment #5 (1 of 4)  
Elberfeld USGS Quadrangle Map  
Showing I-69 Section 1  
Stream and Wetland Impact Locations

Scale  
800 0 800 1600 Feet

— Section 1 Preferred Alternative  
— Stream Impact Sites  
— Wetland Impact Sites



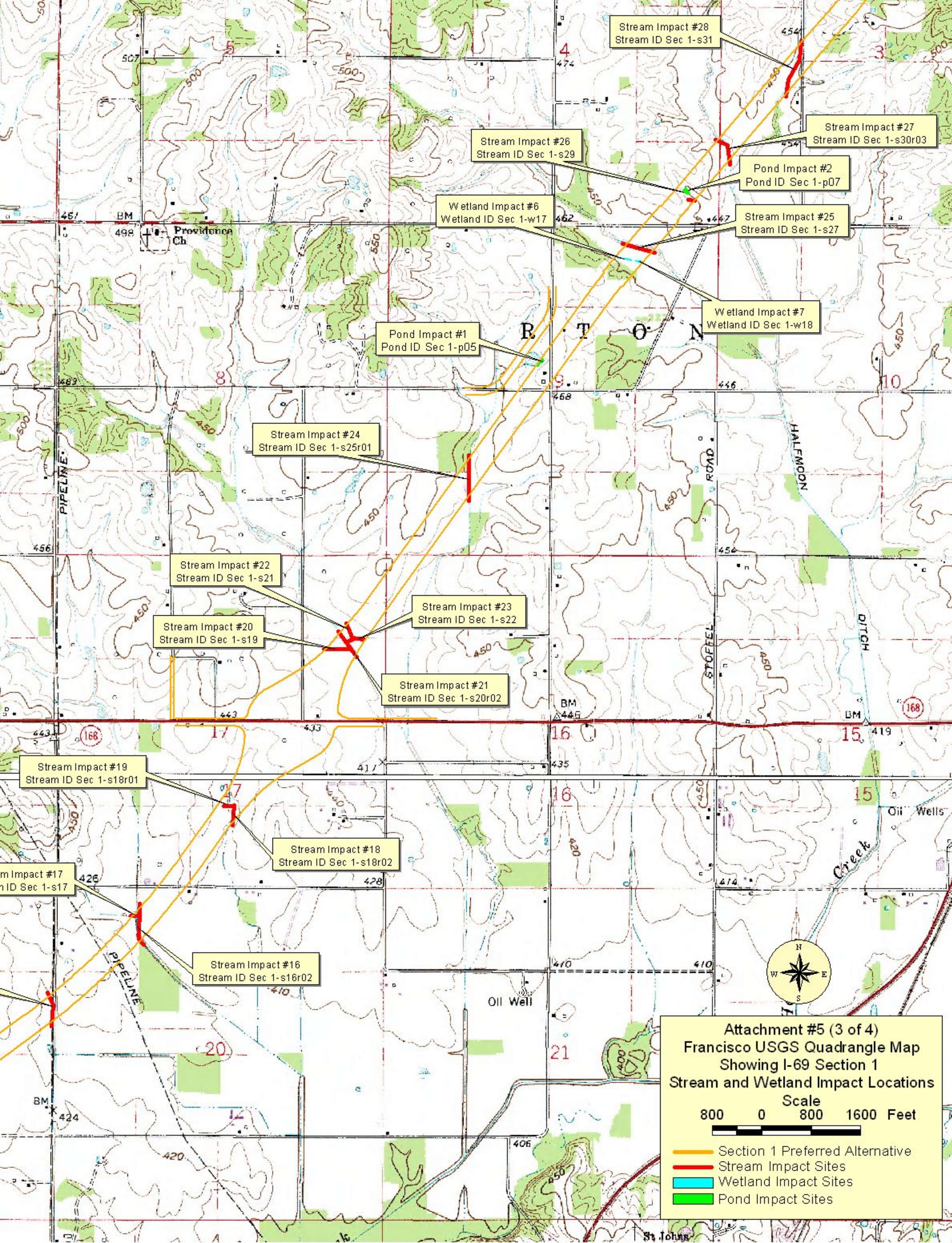


**Attachment #5 (2 of 4)**  
**Elberfeld USGS Quadrangle Map**  
**Showing I-69 Section 1**  
**Stream and Wetland Impact Locations**

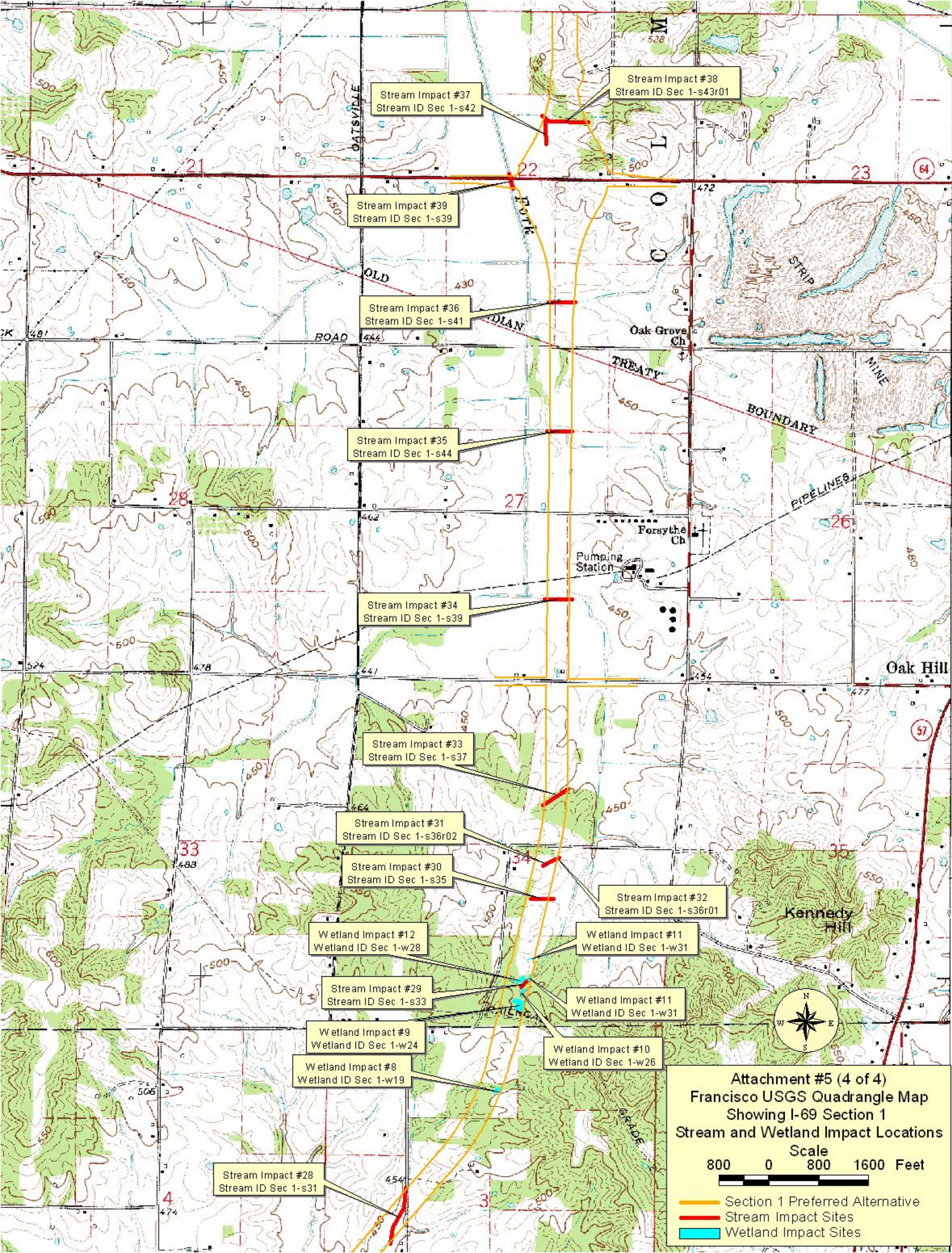
**Scale**  
800 0 800 1600 Feet

— Section 1 Preferred Alternative  
— Stream Impact Sites  
— Wetland Impact Sites







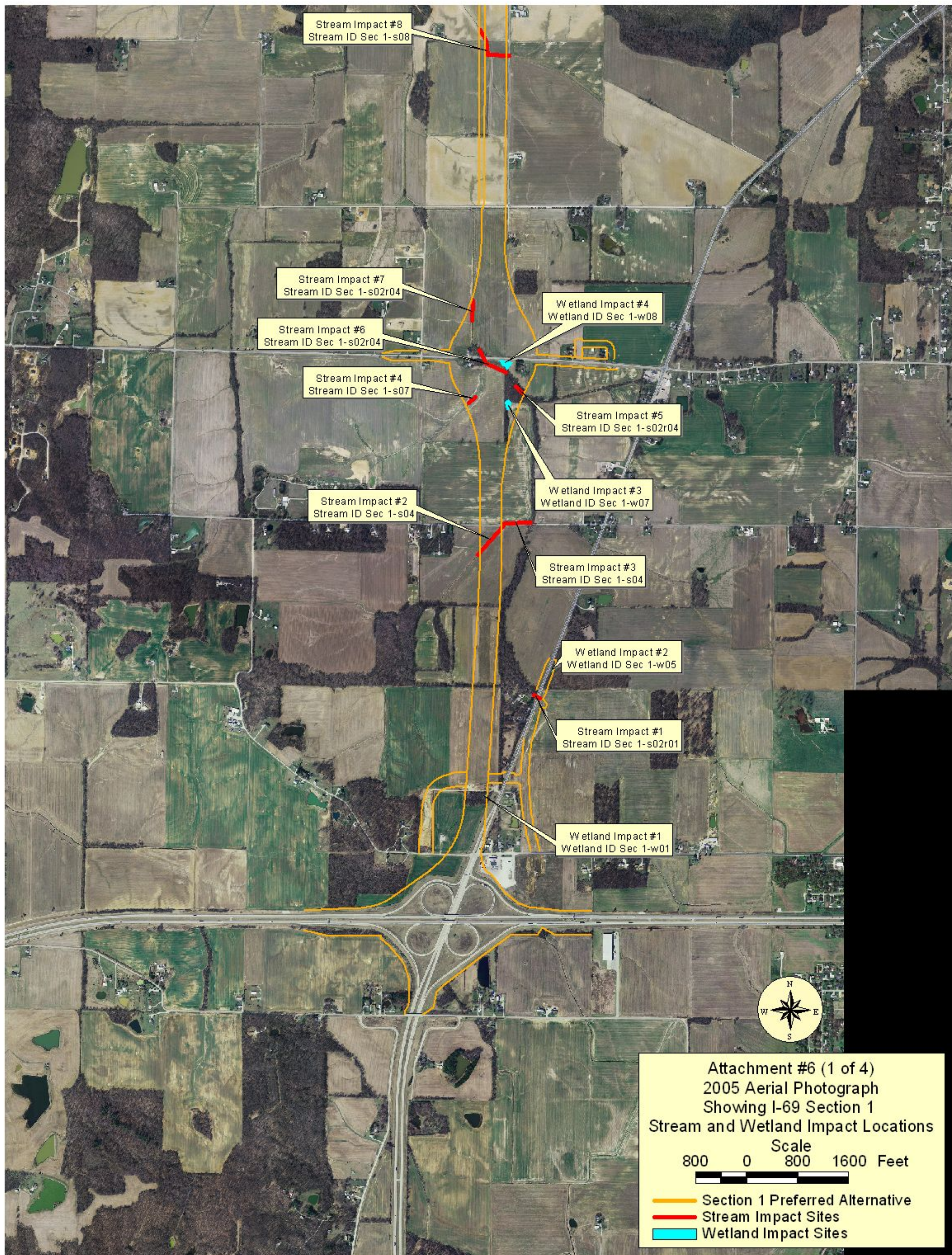




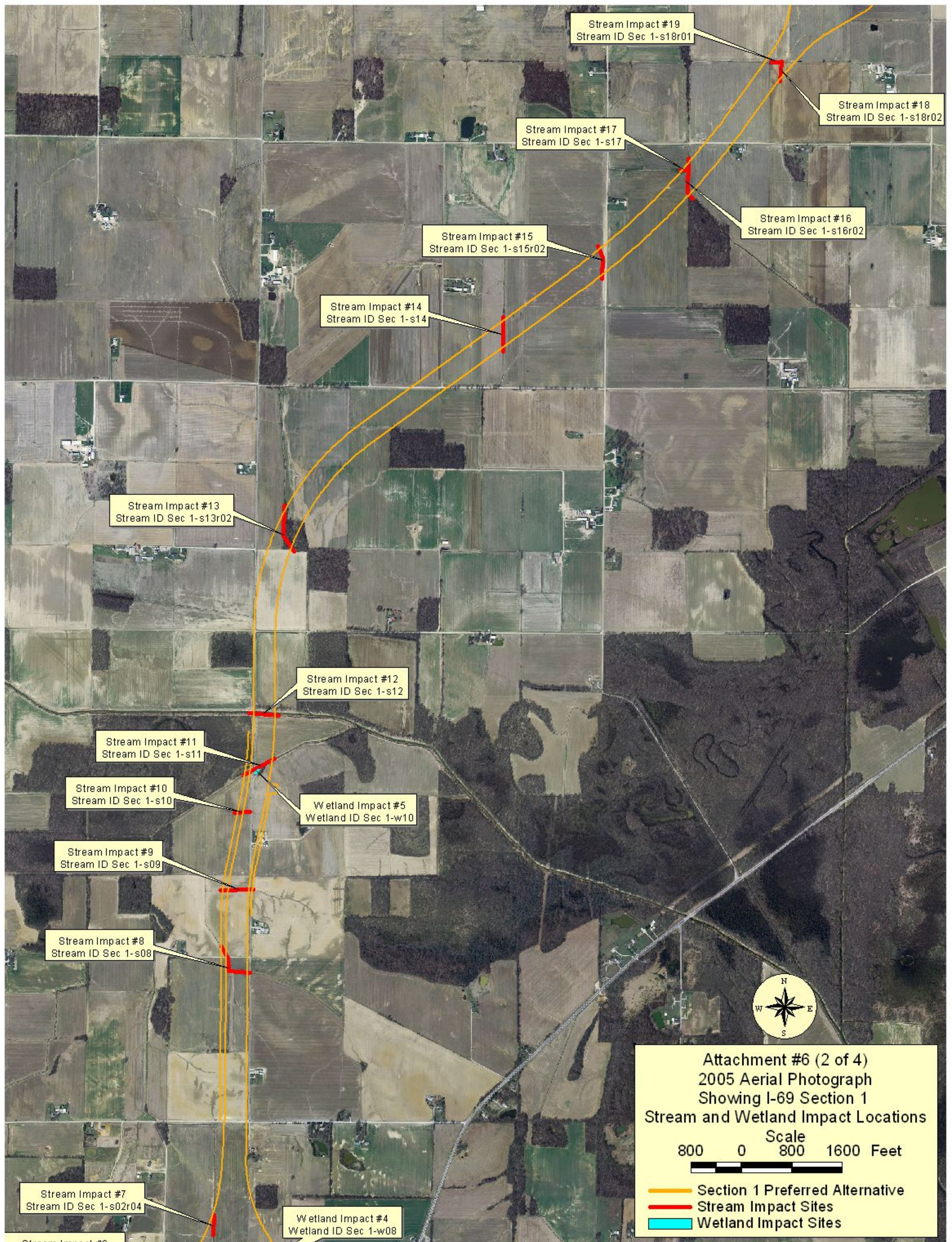
# **401 WQC APPLICATION ATTACHMENT #6**

**2005 Aerial Photograph  
Showing Project Location and Water  
Resource Impacts**







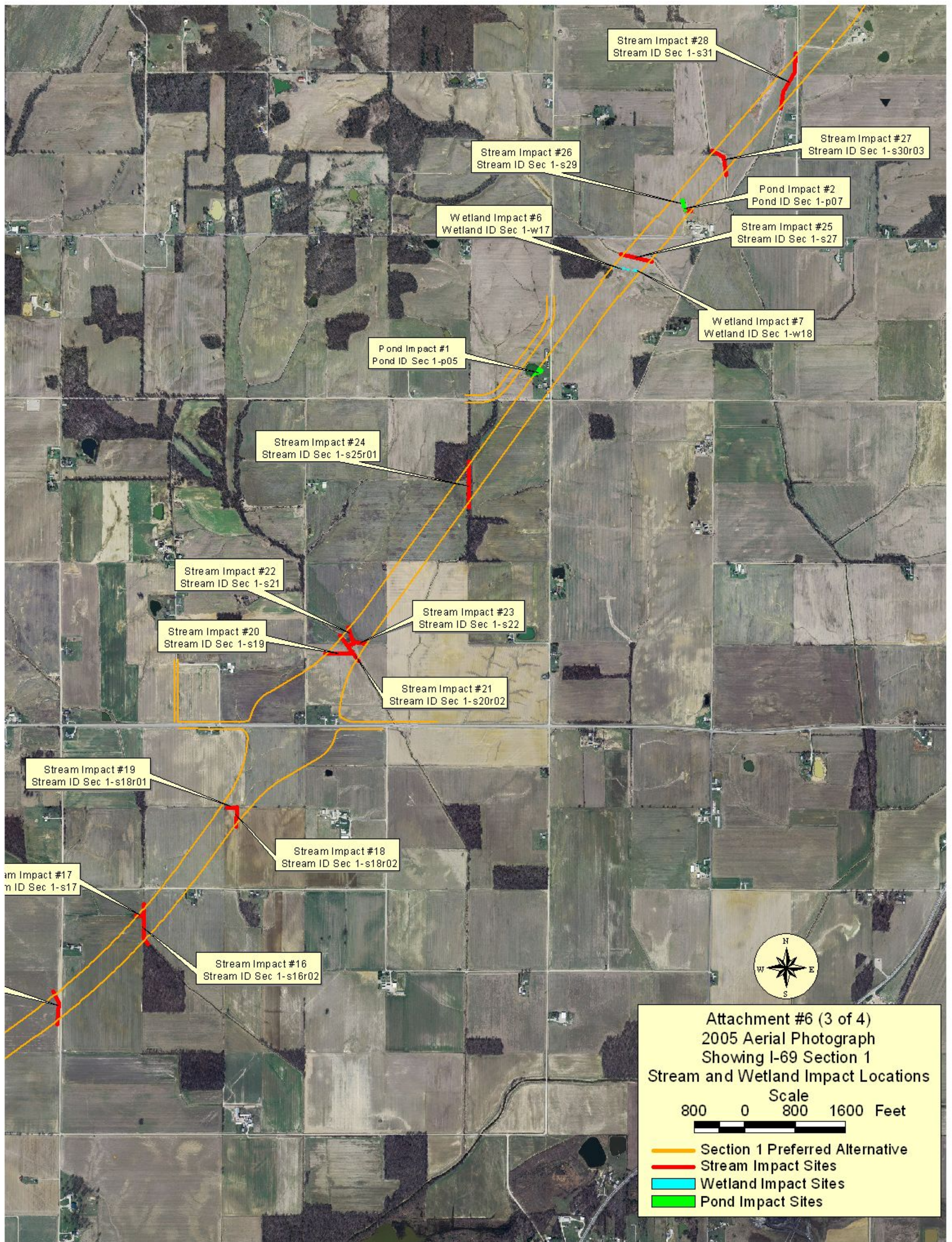


Attachment #6 (2 of 4)  
2005 Aerial Photograph  
Showing I-69 Section 1  
Stream and Wetland Impact Locations

Scale  
800 0 800 1600 Feet

Section 1 Preferred Alternative  
Stream Impact Sites  
Wetland Impact Sites





Stream Impact #28  
Stream ID Sec 1-s31

Stream Impact #27  
Stream ID Sec 1-s30r03

Stream Impact #26  
Stream ID Sec 1-s29

Pond Impact #2  
Pond ID Sec 1-p07

Wetland Impact #6  
Wetland ID Sec 1-w17

Stream Impact #25  
Stream ID Sec 1-s27

Wetland Impact #7  
Wetland ID Sec 1-w18

Pond Impact #1  
Pond ID Sec 1-p05

Stream Impact #24  
Stream ID Sec 1-s25r01

Stream Impact #22  
Stream ID Sec 1-s21

Stream Impact #23  
Stream ID Sec 1-s22

Stream Impact #20  
Stream ID Sec 1-s19

Stream Impact #21  
Stream ID Sec 1-s20r02

Stream Impact #19  
Stream ID Sec 1-s18r01

Stream Impact #18  
Stream ID Sec 1-s18r02

Stream Impact #17  
Stream ID Sec 1-s17

Stream Impact #16  
Stream ID Sec 1-s16r02

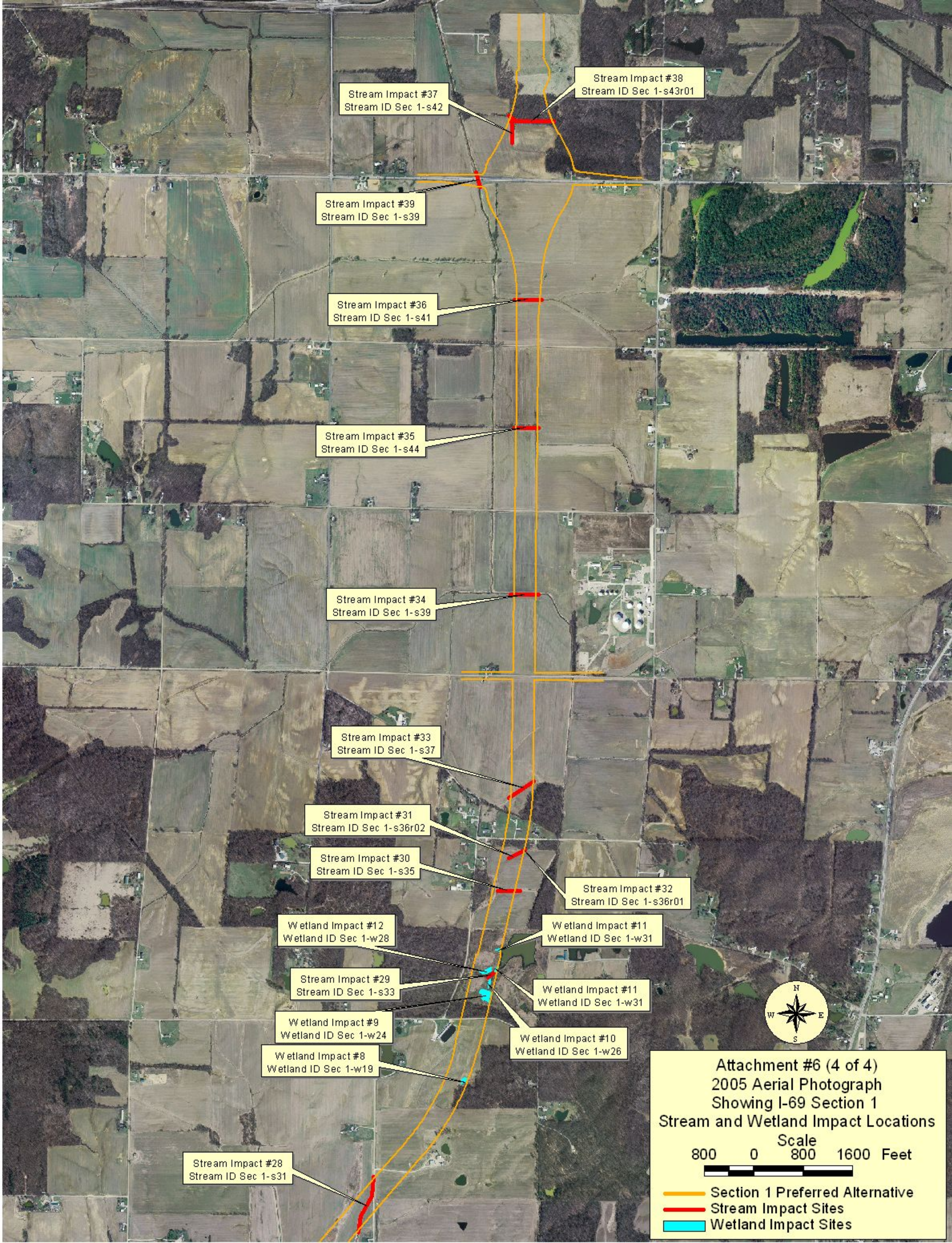


Attachment #6 (3 of 4)  
2005 Aerial Photograph  
Showing I-69 Section 1  
Stream and Wetland Impact Locations

Scale  
800 0 800 1600 Feet

- Section 1 Preferred Alternative
- Stream Impact Sites
- Wetland Impact Sites
- Pond Impact Sites



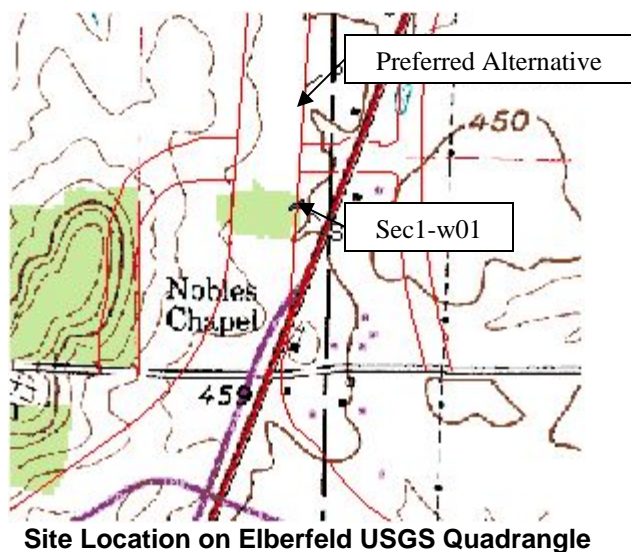




# **401 WQC APPLICATION ATTACHMENT #7**

**Water Resource Impact Site Forms**

## Wetland Impact # 1 (Wetland ID - Sec 1-w01)



**Aquatic Resource:** Wetland

**Type:** Forested

**County:** Gibson

**PLSS:** NE ¼ Section 13 T4S R10W

**USGS Quadrangle:** Elberfeld

**Watershed:** Pigeon Ck/Snake Run

**UTME:** 459,036

**UTMN:** 4,225,356

**USACE Jurisdiction:** Yes

**IDEM Jurisdiction:** Yes

Wetland Sec1-w01						
Polygon ID	Wetland Type	Area Impacted	Alternative	InWRAP Assessment		
				Animal Habitat Measure	Botanical Measure	Hydrology Measure
W01	Forested	0.02 acres	4	Fair	Poor	Fair

**Description of Potential Impact:** This wetland totals 0.06 acres and is located west of SR 57. Alternative 4 will impact 0.02 acres of this wetland complex. The mapped soil type is Hosmer silt loam. The area showed 75 – 100% vegetative cover. Poison ivy and Leersia berry dominate the herbaceous plant species, with red maple and American elms dominating the tree species. INWRAP data completed on this wetland indicated fair animal habitat, poor botanical diversity, and fair hydrology.

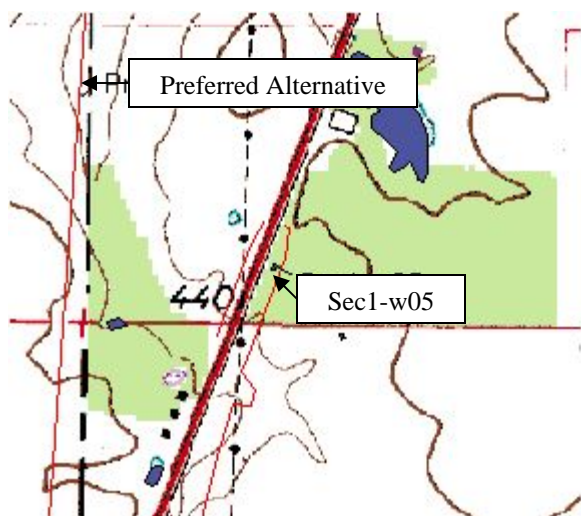
**Wetland Impact # 1 (Wetland ID - Sec 1-w01)**

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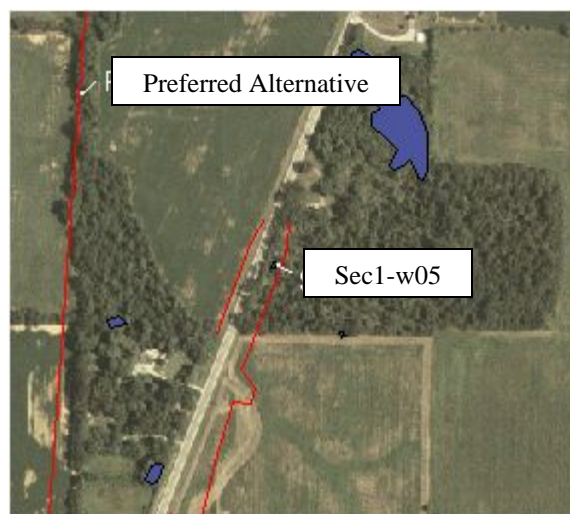


Photograph taken looking west

## Wetland Impact #2 (Wetland ID - Sec 1-w05)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Wetland	<b>Watershed:</b>	Pigeon Ck/Snake Run
<b>Type:</b>	Emergent	<b>UTME:</b>	459,355
<b>County:</b>	Warrick	<b>UTMN:</b>	4,225,968
<b>PLSS:</b>	SW ¼ Section 7 T4S R9W	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Elberfeld	<b>IDEM Jurisdiction:</b>	Yes

Wetland Sec1-w05						
Polygon ID	Wetland Type	Area Impacted	Alternative	InWRAP Assessment		
				Animal Habitat Measure	Botanical Measure	Hydrology Measure
W05	Emergent	0.01 acre	4	Poor	Poor	Fair

**Description of Potential Impact:** This is an emergent wetland located east of SR 57 in Warrick County. Alternative 4 will impact the entire 0.01 acre of this wetland complex. The mapped soil type is Iva silt loam. The herbaceous, vegetative cover was 75 – 100%, with a woody plant cover of 25 – 50%. Slender rush, annual ragweed, yellow-seed false pimpernel, Pennsylvania smartweed and blunt spikerush dominate the herbaceous species of this site. INWRAP data completed on this wetland indicated poor animal habitat, poor botanical diversity, and fair hydrology.



## **Wetland Impact #2 (Wetland ID - Sec 1-w05)**

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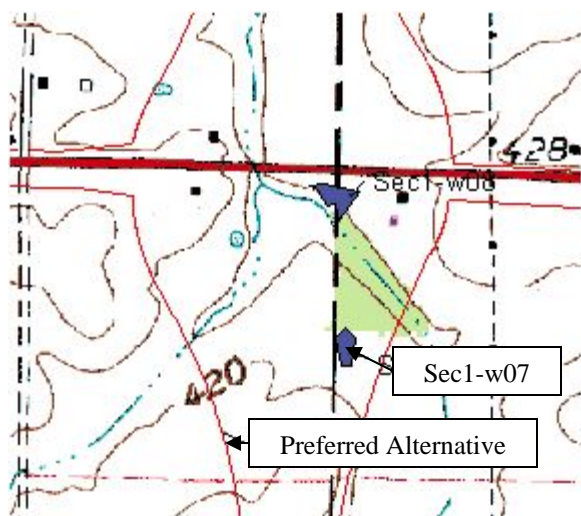
Photograph taken looking southwest



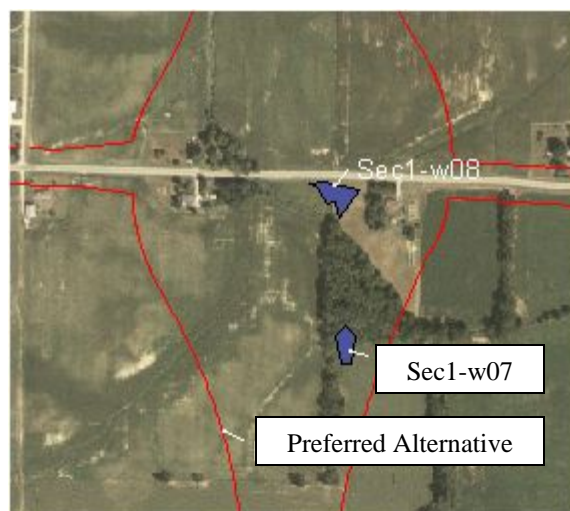
Photograph taken looking northeast



## Wetland Impact #3 (Wetland ID - Sec 1-w07)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

**Aquatic Resource:** Wetland

**Type:** Emergent

**County:** Warrick

**PLSS:** NW ¼ Section 7 T4S R9W

**USGS Quadrangle:** Elberfeld

**Watershed:** Pigeon Ck/Snake Run

**UTME:** 459,142

**UTMN:** 4,227,274

**USACE Jurisdiction:** Yes

**IDEM Jurisdiction:** Yes

Wetland Sec1-w07						
Polygon ID	Wetland Type	Area Impacted	Alternative	InWRAP Assessment		
				Animal Habitat Measure	Botanical Measure	Hydrology Measure
W07	Emergent	0.14 acre	4	Poor	Poor	Fair

**Description of Potential Impact:** This is an emergent wetland located southwest of the intersection of SR 57 and SR 68. Alternative 4 will impact 0.14 acre of this 0.23 acre wetland. The mapped soil type is Stendal silt loam. The area showed 75 – 100% herbaceous cover and <25% tree coverage. Sorghum halepense and Ambrosia trifida dominate the herbaceous species. INWRAP data completed on this wetland indicated poor animal habitat, poor botanical diversity, and fair hydrology.

### **Wetland Impact #3 (Wetland ID - Sec 1-w07)**

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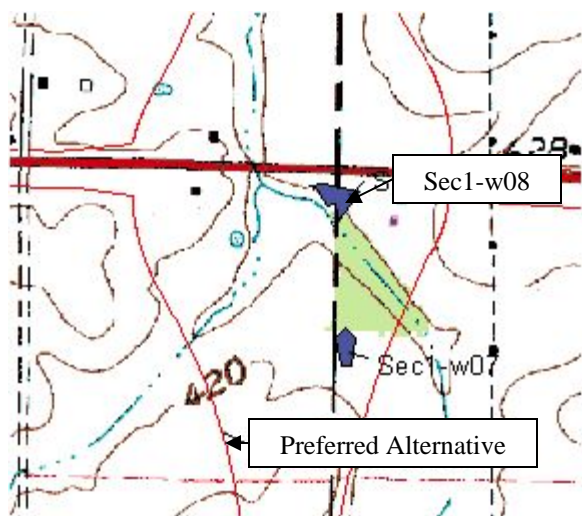


Photograph taken looking north

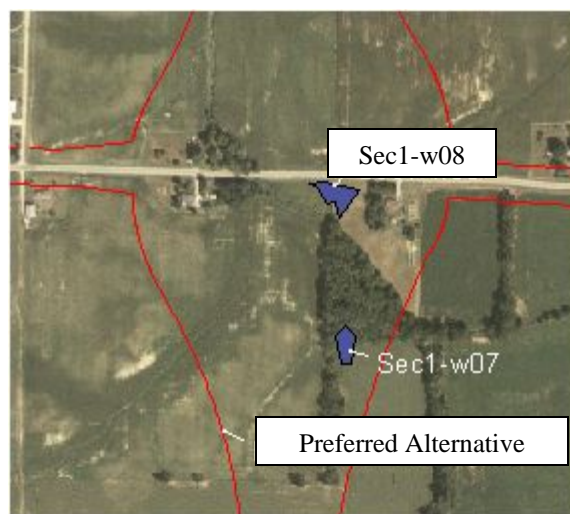


Photograph taken looking south

## Wetland Impact #4 (Wetland ID - Sec 1-w08)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Wetland	<b>Watershed:</b>	Pigeon Ck/Snake Run
<b>Type:</b>	Emergent	<b>UTME:</b>	459,128
<b>County:</b>	Gibson/Warrick	<b>UTMN:</b>	4,227,474
<b>PLSS:</b>	NE ¼ Section 12 T4S R10W	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Elberfeld	<b>IDEM Jurisdiction:</b>	Yes

Wetland Sec1-w08						
Polygon ID	Wetland Type	Area Impacted	Alternative	InWRAP Assessment		
				Animal Habitat Measure	Botanical Measure	Hydrology Measure
W08	Emergent	0.26 acre	4	Poor	Poor	Fair

**Description of Potential Impact:** Wetland Sec1-w08 is an emergent wetland located west of SR 57. Alternative 4 will impact 0.26 acre of this 0.33 acre wetland. The mapped soil type is Stendal silt loam. The dominate herbaceous species were *Bidens frondosa*, *Agrostis alba* and smartweed. The area showed 75 – 100% vegetative, herbaceous cover. The amount of woody plant cover was found to be <25%. INWRAP data completed on this wetland indicated poor animal habitat, poor botanical diversity, and fair hydrology.



## **Wetland Impact #4 (Wetland ID - Sec 1-w08)**

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Photograph taken looking northwest

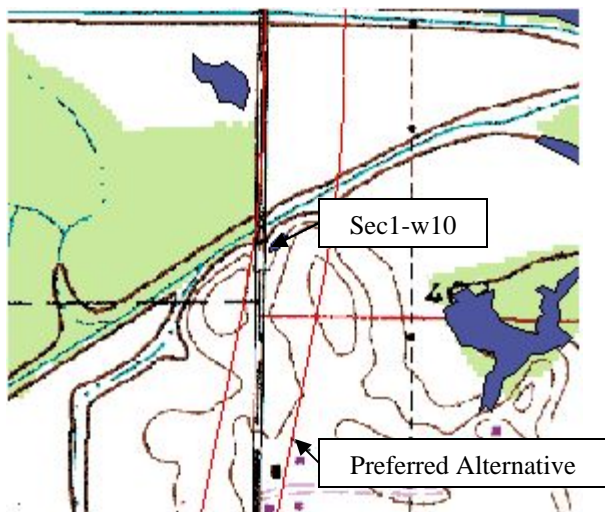


Photograph taken looking southwest

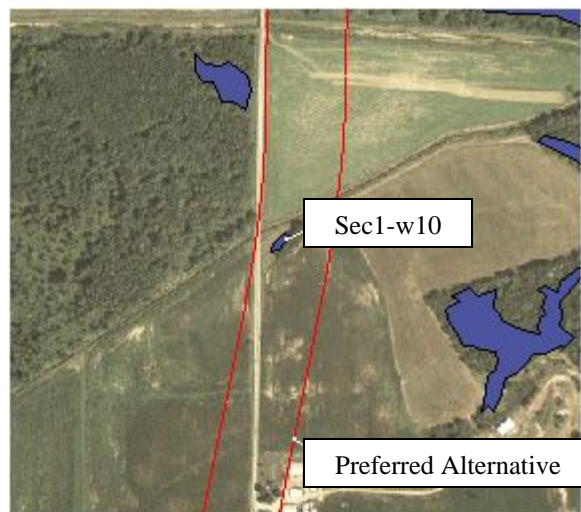


Photograph taken looking southeast

## Wetland Impact #5 (Wetland ID - Sec 1-w10)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

**Aquatic Resource:** Wetland  
**Type:** Emergent  
**County:** Gibson  
**PLSS:** SW ¼ Section 30 T3S R9W  
**USGS Quadrangle:** Elberfeld

**Watershed:** Pigeon Ck/Snake Run  
**UTME:** 459,181  
**UTMN:** 4,229,987  
**USACE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes

Wetland Sec1-w10						
Polygon ID	Wetland Type	Area Impacted	Alternative	InWRAP Assessment		
				Animal Habitat Measure	Botanical Measure	Hydrology Measure
W10	Emergent	0.07 acres	4	Poor	Poor	Fair

**Description of Potential Impact:** Sec1-w10 is an emergent wetland located east of SR 57. The preferred alternative will impact the entire 0.07 acre of this site. The mapped soil type is Taftown silt loam. The area showed 75 – 100% herbaceous, vegetative cover and <25% woody plant cover. INWRAP data completed on this wetland indicated poor animal habitat, poor botanical diversity, and fair hydrology.

## **Wetland Impact #5 (Wetland ID - Sec 1-w10)**

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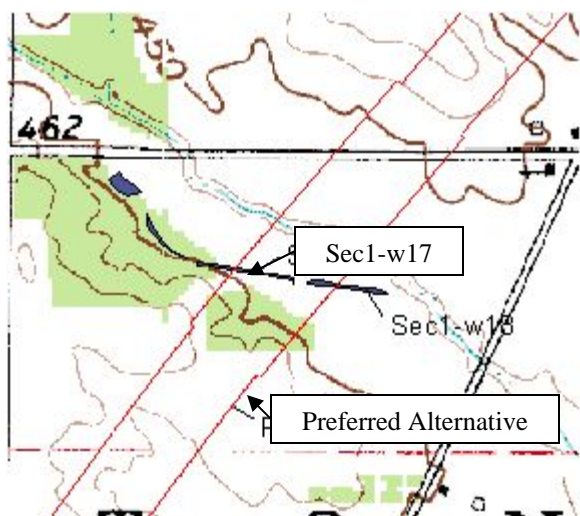
Photograph taken looking northeast



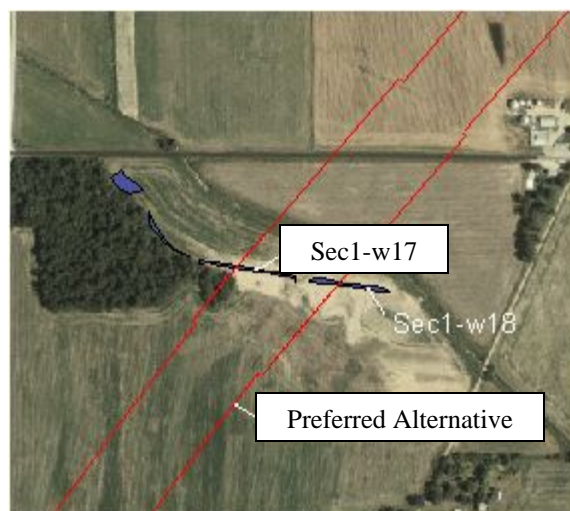
Photograph taken looking southwest



## Wetland Impact #6 (Wetland ID - Sec 1-w17)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

**Aquatic Resource:** Wetland  
**Type:** Emergent  
**County:** Gibson  
**PLSS:** NE ¼ Section 9 T3S R9W  
**USGS Quadrangle:** Francisco

**Watershed:** Smith Fk/Halfmoon Ck  
**UTME:** 463,683  
**UTMN:** 4,236,169  
**USACE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes

Wetland Sec1-w17						
Polygon ID	Wetland Type	Area Impacted	Alternative	InWRAP Assessment		
				Animal Habitat Measure	Botanical Measure	Hydrology Measure
W17	Emergent	0.06 acre	4	Poor	Poor	Fair

**Description of Potential Impact:** Sec1-w17 is an emergent wetland located west of SR 57 near CR 800. Alternative 4 will impact 0.06 acre of the total 0.11 acre site. The mapped soil type is Steff silt loam. The area showed 75 – 100% vegetative, herbaceous cover and <25% woody plant cover. Echinochloa crusgalli, Eupatorium perfoliatum and Eupatorium serotinum dominate the herbaceous species. INWRAP data completed on this wetland indicated poor animal habitat, poor botanical diversity, and fair hydrology.

**Wetland Impact #6 (Wetland ID - Sec 1-w17)**

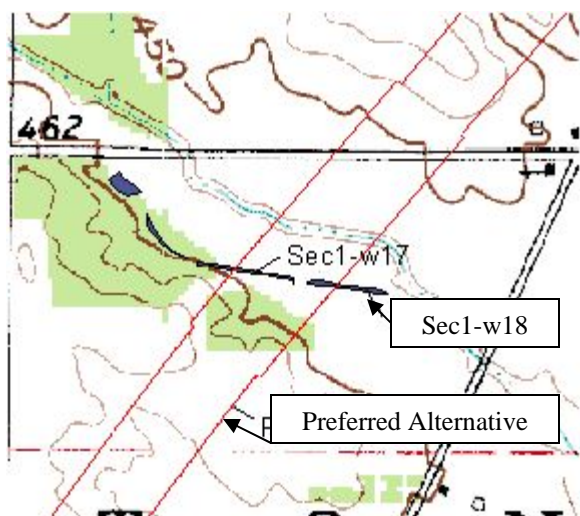
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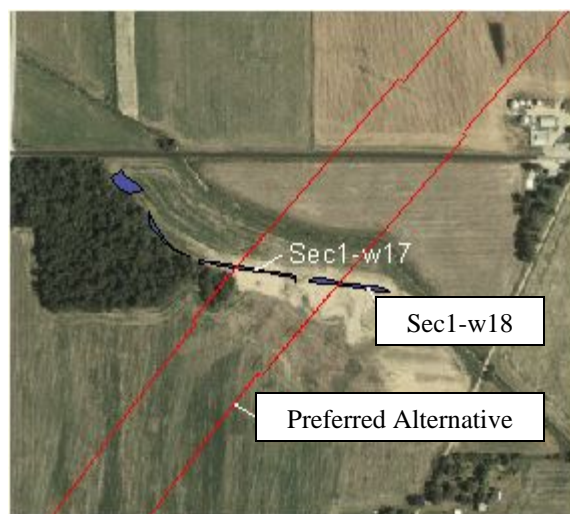
Photograph taken looking northwest



## Wetland Impact #7 (Wetland ID - Sec 1-w18)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

**Aquatic Resource:** Wetland  
**Type:** Emergent  
**County:** Gibson  
**PLSS:** NE ¼ Section 9 T3S R9W  
**USGS Quadrangle:** Francisco

**Watershed:** Smith Fk/Halfmoon Ck  
**UTME:** 463,774  
**UTMN:** 4,236,157  
**USACE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes

Wetland Sec1-w18						
Polygon ID	Wetland Type	Area Impacted	Alternative	InWRAP Assessment		
				Animal Habitat Measure	Botanical Measure	Hydrology Measure
W18	Emergent	0.05 acre	4	Poor	Poor	Poor

**Description of Potential Impact:** This emergent wetland is located west of SR 57 and east of CR 800. Alternative 4 will impact 0.05 acre of the total 0.12 acre site. The mapped soil type is Stendal silt loam. The area showed 75 – 100% vegetative cover. No dominate species were noted during the site visit. INWRAP data completed on this wetland indicated poor animal habitat, poor botanical diversity, and poor hydrology.

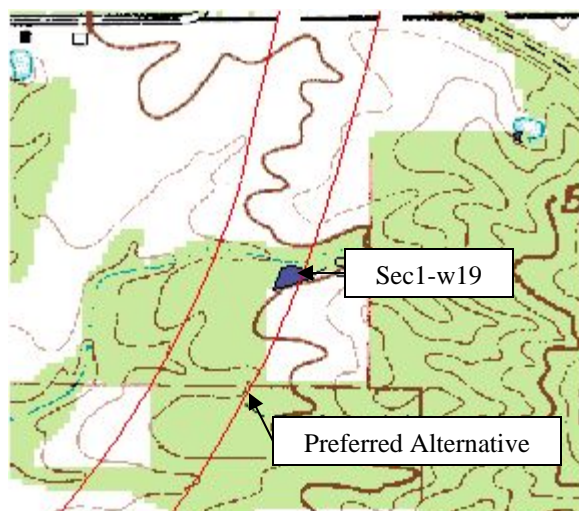
**Wetland Impact #7 (Wetland ID - Sec 1-w18)**

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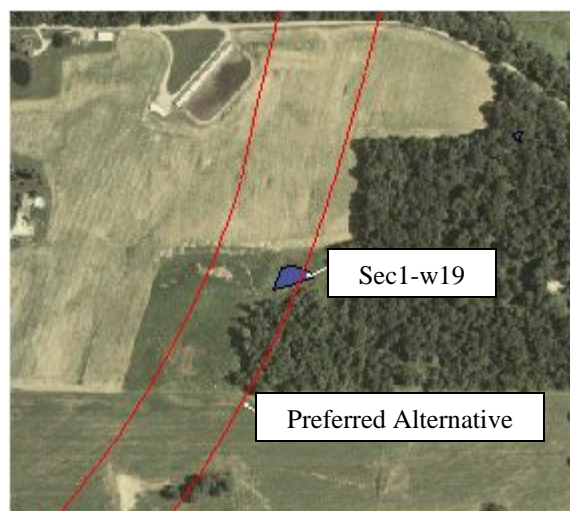


Photograph taken looking northwest

## Wetland Impact #8 (Wetland ID - Sec 1-w19)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

**Aquatic Resource:** Wetland  
**Type:** Emergent  
**County:** Gibson  
**PLSS:** NE ¼ Section 3 T3S R9W  
**USGS Quadrangle:** Francisco

**Watershed:** Smith Fk/Halfmoon Ck  
**UTME:** 465,009  
**UTMN:** 4,237,708  
**USACE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes

Wetland Sec1-w19						
Polygon ID	Wetland Type	Area Impacted	Alternative	InWRAP Assessment		
				Animal Habitat Measure	Botanical Measure	Hydrology Measure
W19	Emergent	0.16 acres	4	Poor	Poor	Fair

**Description of Potential Impact:** Sec1-w19 is an emergent wetland located south of CR 925. Alternative 4 will impact 0.16 acre of this 0.19 acre wetland. The mapped soil type is Hosmer silt loam. The area showed 50 – 75% herbaceous cover. The dominant herbaceous species are Echinochloa crusgalli, Eleocharis obtuse, Polygonum pensylvanicum and Polygonum lapathifolium. INWRAP data completed on this wetland indicated poor animal habitat, poor botanical diversity, and fair hydrology.



## **Wetland Impact #8 (Wetland ID - Sec 1-w19)**

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Photograph taken looking east

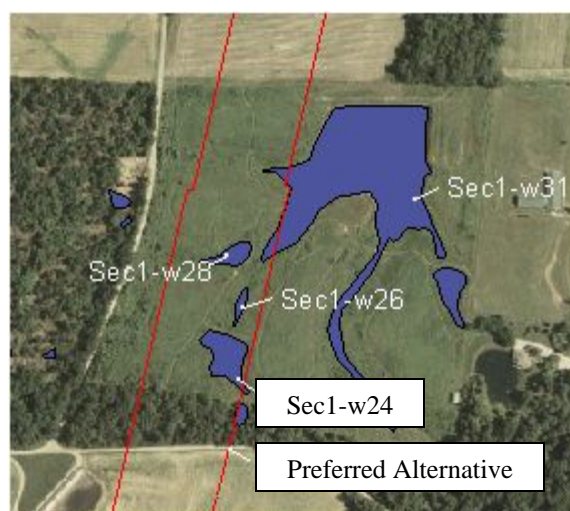


Photograph taken looking west

## Wetland Impact #9 (Wetland ID - Sec 1-w24)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

**Aquatic Resource:** Wetland  
**Type:** Emergent  
**County:** Gibson  
**PLSS:** SE ¼ Section 34 T2S R9W  
**USGS Quadrangle:** Francisco

**Watershed:** Keg Ck/W. Fk Keg Ck  
**UTME:** 465,105  
**UTMN:** 4,238,126  
**USACE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes

Wetland Sec1-w24							
Polygon ID	Wetland Type	Wetland Area Impacted	Open Water Impacted	Alternative	InWRAP Assessment		
					Animal Habitat Measure	Botanical Measure	Hydrology Measure
W24	Emergent	0.16 acre	0.32 acre	4	Fair	Poor	Fair

**Description of Potential Impact:** This emergent wetland is located 1.2 miles west of SR 57. Alternative 4 will impact 0.16 acre of emergent wetland and 0.32 acre of open water of this 0.58 acre wetland complex. The mapped soil type is Hosmer silt loam. The area showed <25% vegetative cover. *Juncus effusus* and *Echinochloa crusgalli* dominate the herbaceous species. INWRAP data completed on this wetland indicated fair animal habitat, poor botanical diversity, and fair hydrology.

**Wetland Impact #9 (Wetland ID - Sec 1-w24)**

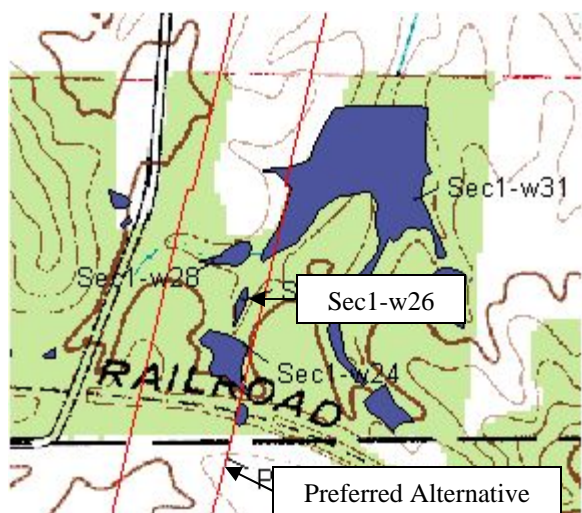
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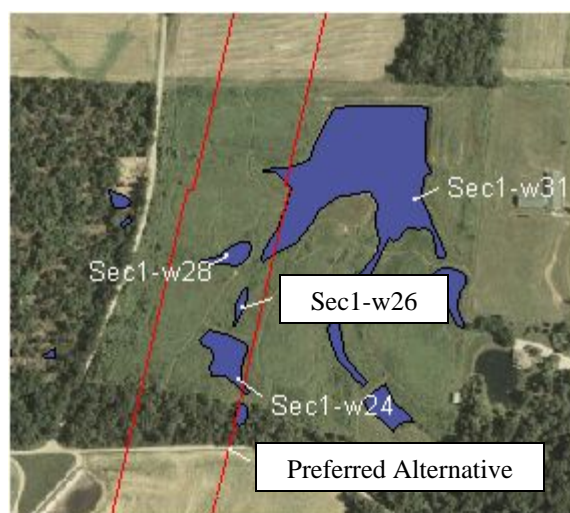
Photograph taken looking east



## Wetland Impact #10 (Wetland ID - Sec 1-w26)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

**Aquatic Resource:** Wetland  
**Type:** Emergent  
**County:** Gibson  
**PLSS:** SE ¼ Section 34 T2S R9W  
**USGS Quadrangle:** Francisco

**Watershed:** Keg Ck/W Fk Keg Ck  
**UTME:** 465,126  
**UTMN:** 4,238,184  
**USACE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes

Wetland Sec1-w26						
Polygon ID	Wetland Type	Area Impacted	Alternative	InWRAP Assessment		
				Animal Habitat Measure	Botanical Measure	Hydrology Measure
W26	Emergent	0.09 acre	4	Fair	Poor	Fair

**Description of Potential Impact:** Sec1-w26 is an emergent wetland located 1.2 miles west of SR 57. Alternative 4 will impact the entire 0.09 acre of this site. The mapped soil type is Hosmer silt loam. The area showed 75 – 100% vegetative cover. Solidago Canadensis and Carex sp. dominate the herbaceous species. Acer saccharinum is the dominate tree species in this site. INWRAP data completed on this wetland indicated fair animal habitat, poor botanical diversity, and fair hydrology.

## **Wetland Impact #10 (Wetland ID - Sec 1-w26)**

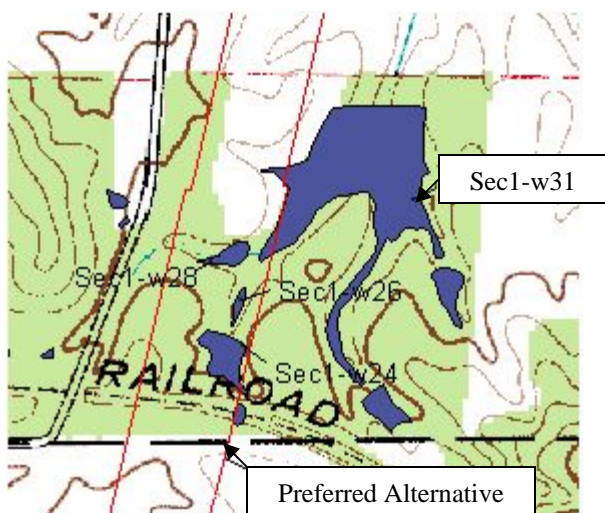
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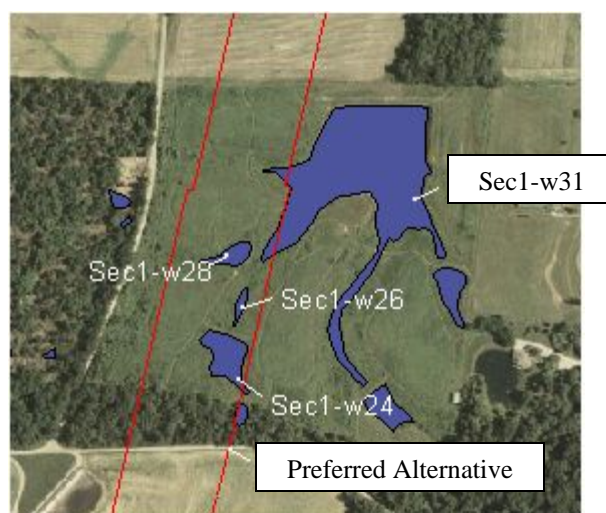
Photograph taken looking northeast



## Wetland Impact #11 (Wetland ID - Sec 1-w31)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

**Aquatic Resource:** Wetland  
**Type:** Emergent  
**County:** Gibson  
**PLSS:** SE ¼ Section 34 T2S R9W  
**USGS Quadrangle:** Francisco

**Watershed:** Keg Ck/W Fk Keg Ck  
**UTME:** 465,278  
**UTMN:** 4,238,377  
**USACE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes

Wetland Sec1-w31						
Polygon ID	Wetland Type	Area Impacted	Alternative	InWRAP Assessment		
				Animal Habitat Measure	Botanical Measure	Hydrology Measure
W31	Emergent	0.09 acre	4	Fair	Poor	Fair

**Description of Potential Impact:** Sec1-w31 is an emergent wetland located west of SR 57. Alternative 4 will impact 0.09 acre of the total 1.9 acre area. The mapped soil type is Stendal silt loam. The area showed 75 – 100% vegetative cover. Two vegetation zones were noted during the site visit. The first zone composes 25 – 50% of the polygon, and the dominate herbaceous species is *Myriophyllum spicatum*. The second vegetation zone composes 50 – 75% of the polygon, and the dominate herbaceous species is *Ludwegia polycarpa*. INWRAP data completed on this wetland indicated fair animal habitat, poor botanical diversity, and fair hydrology.

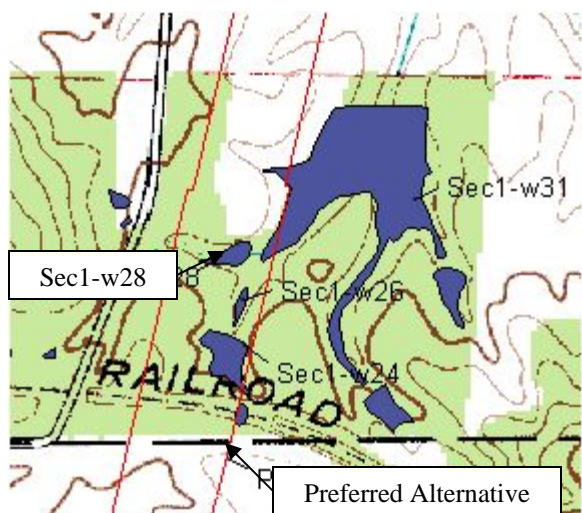
**Wetland Impact #11 (Wetland ID - Sec 1-w31)**

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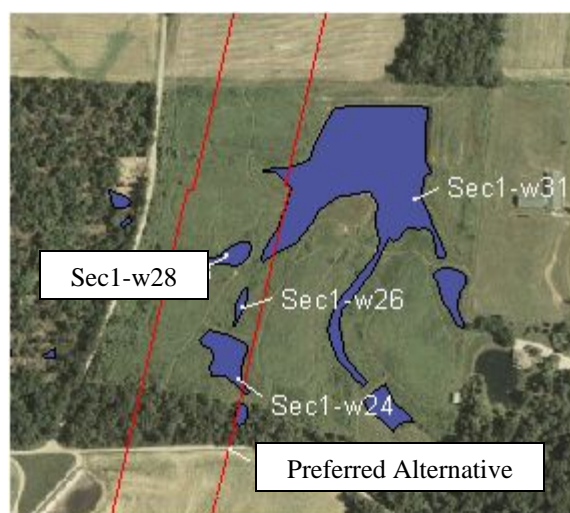


Photograph taken looking west

## Wetland Impact #12 (Wetland ID - Sec 1-w28)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

**Aquatic Resource:** Wetland  
**Type:** Emergent  
**County:** Gibson  
**PLSS:** SE ¼ Section 34 T2S R9W  
**USGS Quadrangle:** Francisco

**Watershed:** Keg Ck/W Fk Keg Ck  
**UTME:** 465,126  
**UTMN:** 4,238,245  
**USACE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes

Wetland Sec1-w28							
Polygon ID	Wetland Type	Wetland Area Impacted	Open Water Impacted	Alternative	InWRAP Assessment		
					Animal Habitat Measure	Botanical Measure	Hydrology Measure
W24	Emergent	0.07 acre	0.15 acre	4	Fair	Poor	Fair

**Description of Potential Impact:** Sec1-w28 is an emergent wetland located 1.2 miles west of SR 57. Alternative 4 will impact the entire 0.07 acre emergent wetland and 0.15 acre open water of this wetland complex. The mapped soil type is Hosmer silt loam. The area showed <25% vegetative cover. *Echinochloa crusgalli* and *Salix nigra* dominate the herbaceous cover of this site. INWRAP data completed on this wetland indicated fair animal habitat, poor botanical diversity, and fair hydrology.

**Wetland Impact #12 (Wetland ID - Sec 1-w28)**

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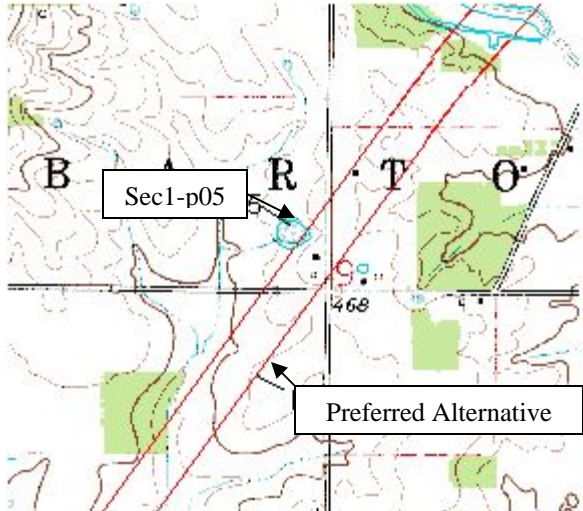


Photograph taken looking east

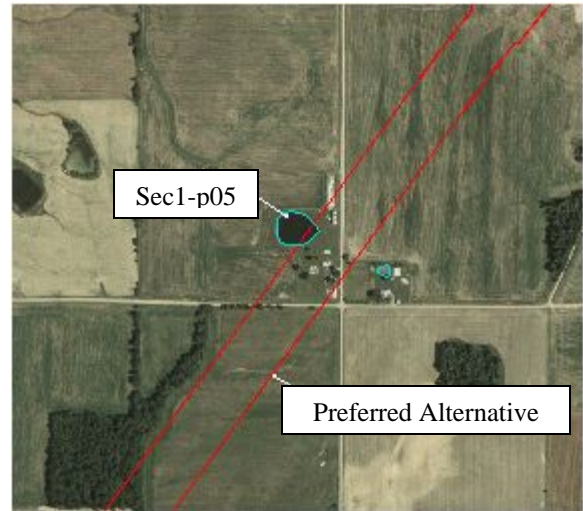


## Pond Impact #1 (Pond ID - Sec1-p05)

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Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

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<b>Aquatic Resource:</b>	Pond	<b>UTME:</b>	463,246
<b>County:</b>	Gibson	<b>UTMN:</b>	4,235,668
<b>PLSS:</b>	NW ¼ Section 9 T3S R9W	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes
<b>Watershed:</b>	Smith Fk/Halfmoon Ck		

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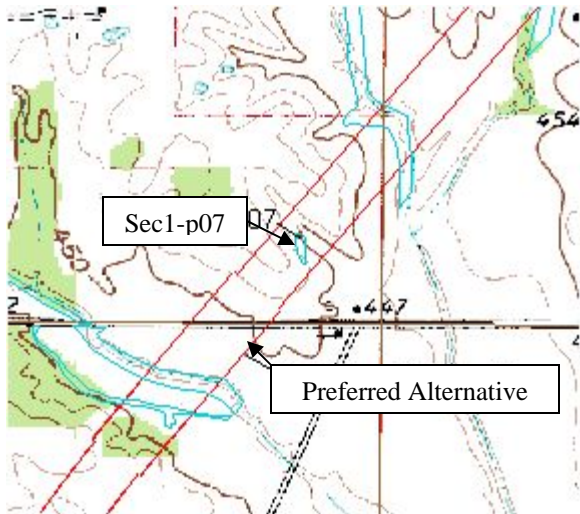
**Total Impact (Acres):** Alternative 4 will impact 0.15 acre of this 0.97 acre pond.



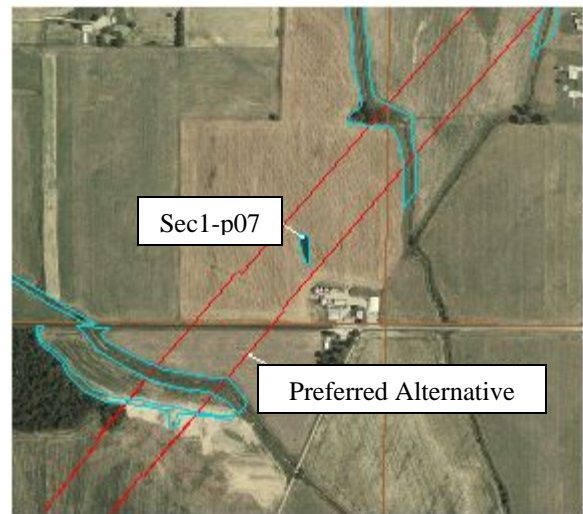
Photograph taken looking southeast

## Pond Impact #2 (Pond ID - Sec1-p07)

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Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

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<b>Aquatic Resource:</b>	Pond
<b>County:</b>	Gibson
<b>PLSS:</b>	SE ¼ Section 4 T3S R9W
<b>USGS Quadrangle:</b>	Francisco
<b>Watershed:</b>	Smith Fk/Halfmoon Ck

<b>UTME:</b>	463,994
<b>UTMN:</b>	4,236,483
<b>USACE Jurisdiction:</b>	Yes
<b>IDEM Jurisdiction:</b>	Yes

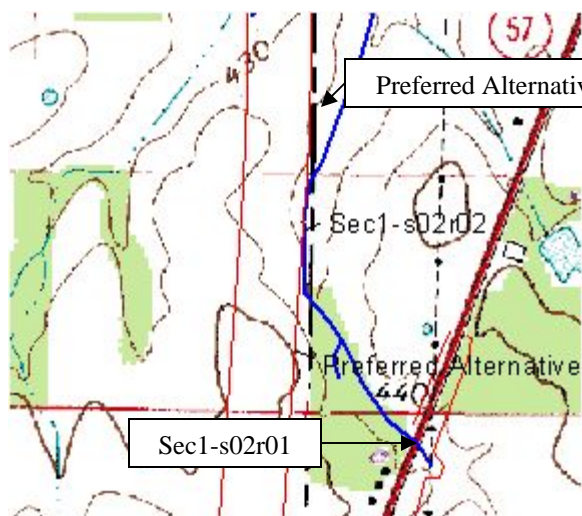
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**Total Impact (Acres):** Alternative 4 will impact this entire 0.13 acre pond.

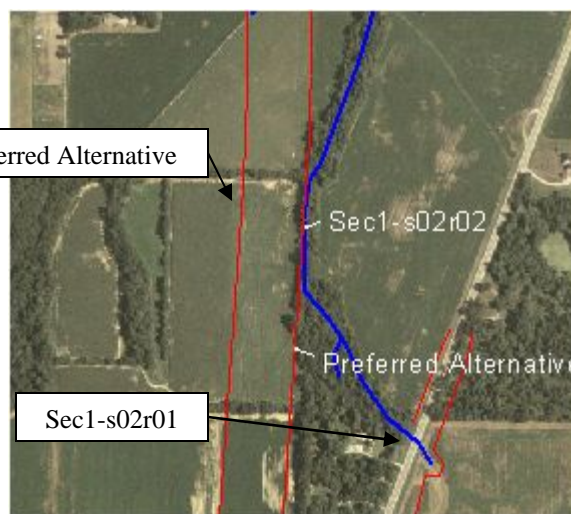


Photograph taken looking northwest

## Stream Impact #1 (Stream ID - Sec 1-s02r01)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Barn Branch Creek  
**County:** Gibson  
**PLSS:** SE ¼ Section 12 T4S R10W  
**UTME:** 459,100  
**UTMN:** 4,226,255  
**USGS Quadrangle:** Elberfeld

**Watershed:** Pigeon Ck/Snake Run  
**Channelized:** Yes  
**IDEM 303(d) List:** No  
**OHWM Width ft:** 9.3  
**OHWM Depth ft:** 0.33  
**USACE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes

### Stream Sec 1-s02r01

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Barn Branch Creek	181 feet	0.04 acre	4	HHEI 51/Modified Class II

**Stream Type:** Intermittent  
**Evaluation Type:** HHEI  
**Evaluation Score:** 51  
**Watershed Area (square miles):** 0.34  
**Legal Drain:** No  
**Predominate Substrate:** Clay  
**Estimated Riparian Width (feet):** 112  
**Estimated Riparian Area (acres):** 0.77



**Stream Impact #1 (Stream ID - Sec 1-s02r01)**

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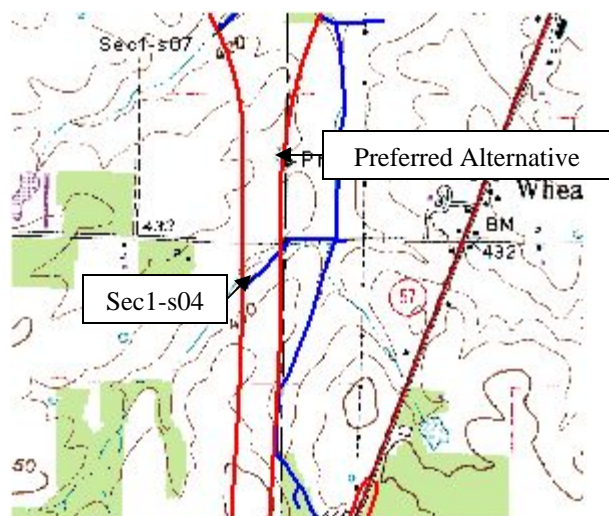
Photograph taken looking upstream



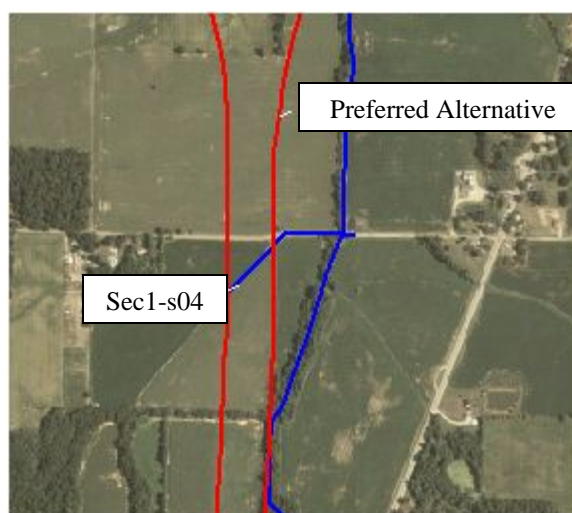
Photograph taken looking downstream



## Stream Impact # 2 and #3 (Stream ID - Sec 1-s04)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Pigeon Ck/Snake Run
<b>Stream Name:</b>	Unnamed Trib. to Pigeon Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SE ¼ Section 12 T4S R10W	<b>OHWM Width ft:</b>	5
<b>UTME:</b>	459,067	<b>OHWM Depth ft:</b>	1
<b>UTMN:</b>	4,226,621	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Elberfeld	<b>IDEM Jurisdiction:</b>	Yes

### Stream Sec 1-s04

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Pigeon Creek	828 feet	0.10 acre	4	HHEI 25/Modified Class I

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	25
<b>Watershed Area (square miles):</b>	0.49
<b>Legal Drain:</b>	Yes
<b>Predominate Substrate:</b>	Clay
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0

## **Stream Impact # 2 and #3 (Stream ID - Sec 1-s04)**

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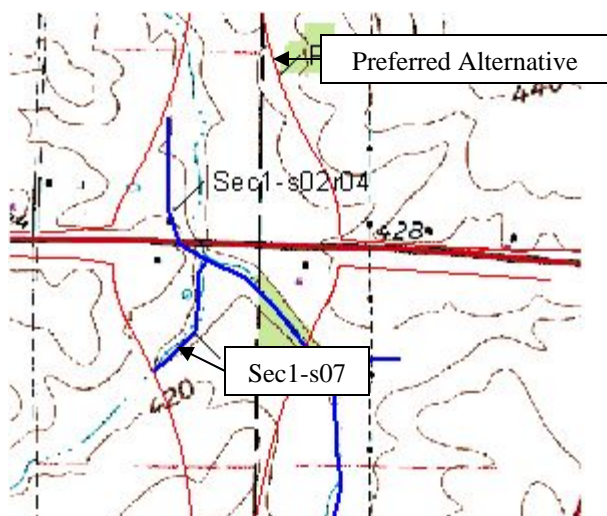
Photograph taken looking upstream



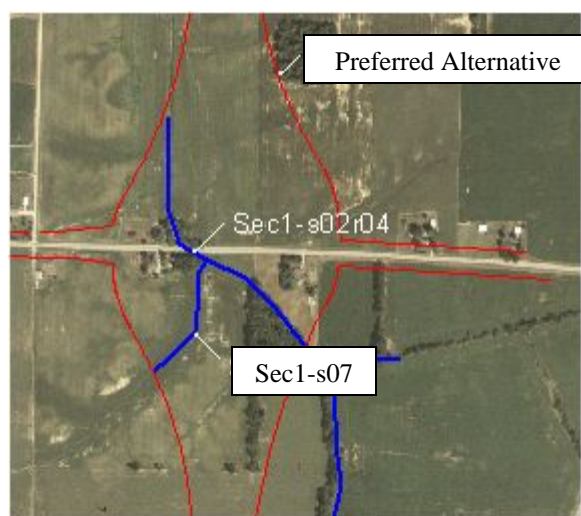
Photograph Looking Downstream



## Stream Impact #4 (Stream ID - Sec 1-s07)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Pigeon Ck/Snake Run
<b>Stream Name:</b>	Unnamed Trib. to Pigeon Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NE ¼ Section 12 T4S R10W	<b>OHWM Width ft:</b>	3
<b>UTME:</b>	459,012	<b>OHWM Depth ft:</b>	0.5
<b>UTMN:</b>	4,227,370	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Elberfeld	<b>IDEM Jurisdiction:</b>	Yes

### Stream Sec 1-s07

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Pigeon Creek	126 feet	0.01 acre	4	HHEI 10/Modified Class I

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	10
<b>Watershed Area (square miles):</b>	0.21
<b>Legal Drain:</b>	Yes
<b>Predominate Substrate:</b>	Clay and Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0

## **Stream Impact #4 (Stream ID - Sec 1-s07)**

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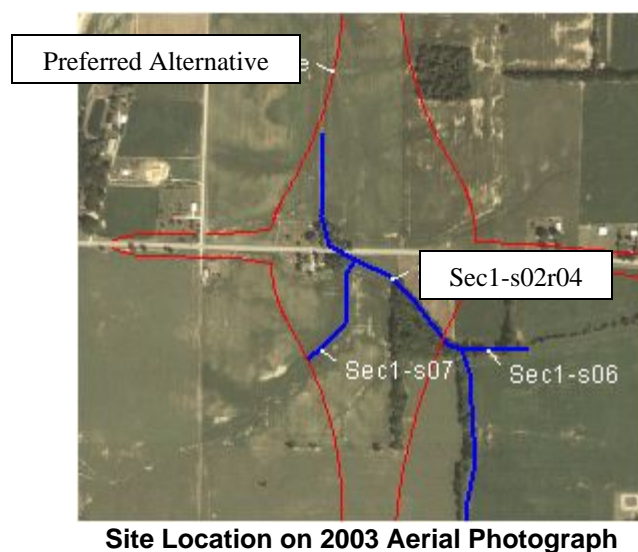
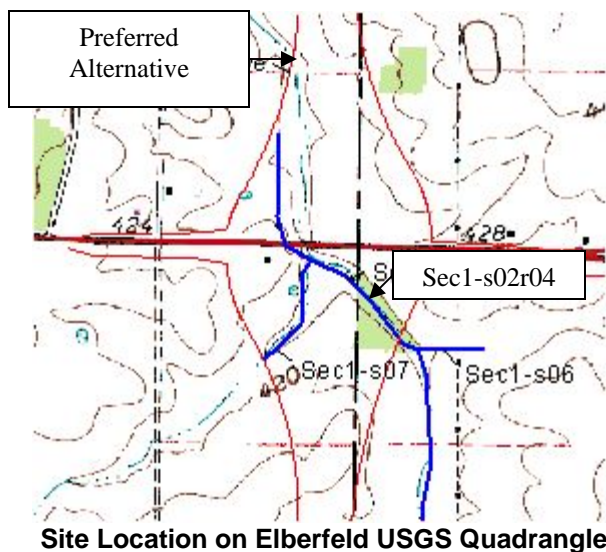
Photograph taken looking upstream



Photograph Looking Downstream



## Stream Impact #5, #6, and #7 (Stream ID - Sec 1-s02r04)



**Aquatic Resource:** Stream  
**Stream Name:** Barn Branch Creek  
**County:** Gibson  
**PLSS:** NE ¼ Section 12 T4S R10W  
**UTME:** 459,055  
**UTMN:** 4,227,472  
**USGS Quadrangle:** Elberfeld

**Watershed:** Pigeon Ck/Snake Run  
**Channelized:** No  
**IDEM 303(d) List:** No  
**OHWM Width ft:** 6  
**OHWM Depth ft:** 1.5  
**USACE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes

### Stream Sec 1-s02r04

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Barn Branch Creek	1,103 feet	0.15 acre	4	QHEI 33

**Stream Type:** Intermittent  
**Evaluation Type:** QHEI  
**Evaluation Score:** 33  
**Watershed Area (square miles):** 1.54  
**Legal Drain:** Yes  
**Predominate Substrate:** Silt and Hardpan  
**Estimated Riparian Width (feet):** 235  
**Estimated Riparian Area (acres):** 2.9



**Stream Impact #5, #6, and #7 (Stream ID - Sec 1-s02r04)**

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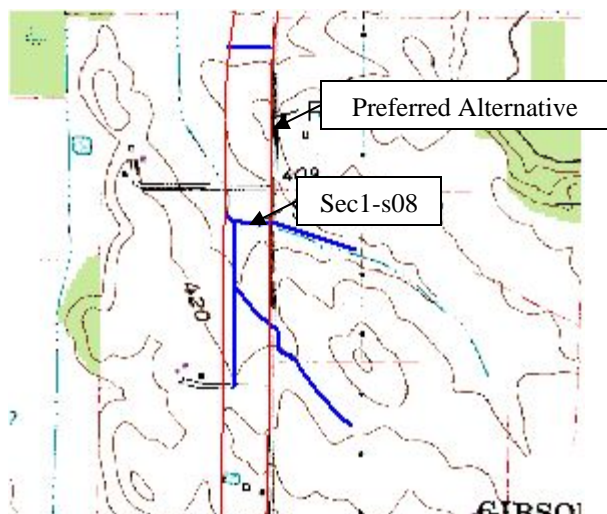
Photograph Looking Upstream



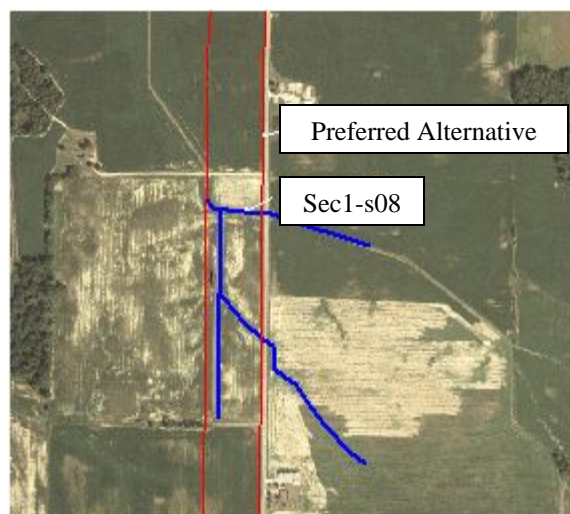
Photograph Looking Downstream



## Stream Impact #8 (Stream ID - Sec 1-s08)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Pigeon Ck/Snake Run
<b>Stream Name:</b>	Unnamed Trib. to Pigeon Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SE ¼ Section 36 T3S R10W	<b>OHWM Width ft:</b>	5
<b>UTME:</b>	459,094	<b>OHWM Depth ft:</b>	1.5
<b>UTMN:</b>	4,228,997	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Elberfeld	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s08				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Pigeon Creek	424 feet	0.05 acres	4	HHEI 10/Modified Class I

<b>Stream Type:</b>	Ephemeral
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	10
<b>Watershed Area (square miles):</b>	0.05
<b>Legal Drain:</b>	Yes
<b>Predominate Substrate:</b>	Clay and Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0

## **Stream Impact #8 (Stream ID - Sec 1-s08)**

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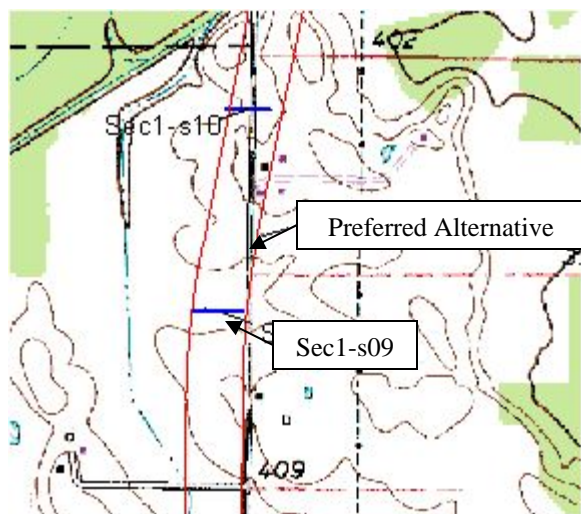
Photograph Looking Upstream



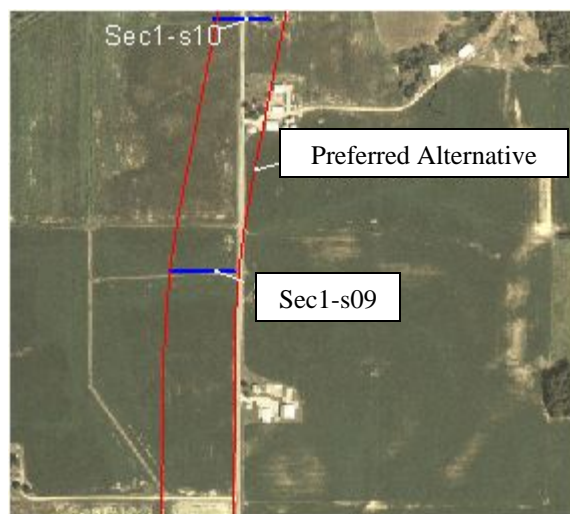
Photograph Looking Downstream



## Stream Impact #9 (Stream ID - Sec 1-s09)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Pigeon Ck/Snake Run
<b>Stream Name:</b>	Unnamed Trib. to Pigeon Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NE ¼ Section 36 T3S R10W	<b>OHWM Width ft:</b>	5
<b>UTME:</b>	459,094	<b>OHWM Depth ft:</b>	1.3
<b>UTMN:</b>	4,229,408	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Elberfeld	<b>IDEM Jurisdiction:</b>	Yes

### Stream Sec 1-s09

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Pigeon Creek	385 feet	0.04 acres	4	HHEI 10/Modified Class I

<b>Stream Type:</b>	Ephemeral
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	10
<b>Watershed Area (square miles):</b>	0.05
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0

## **Stream Impact #9 (Stream ID - Sec 1-s09)**

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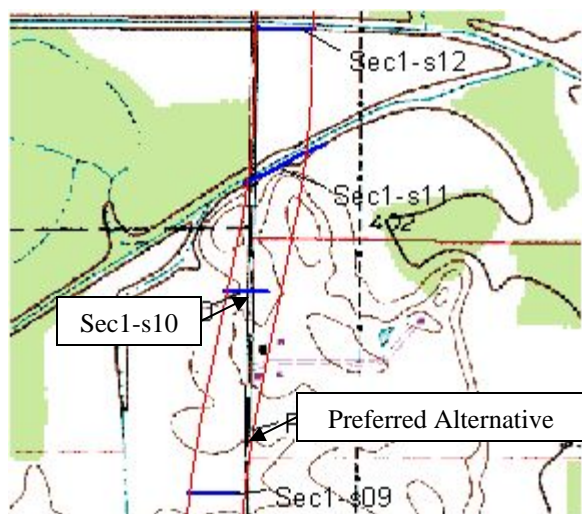
Photograph Looking Upstream



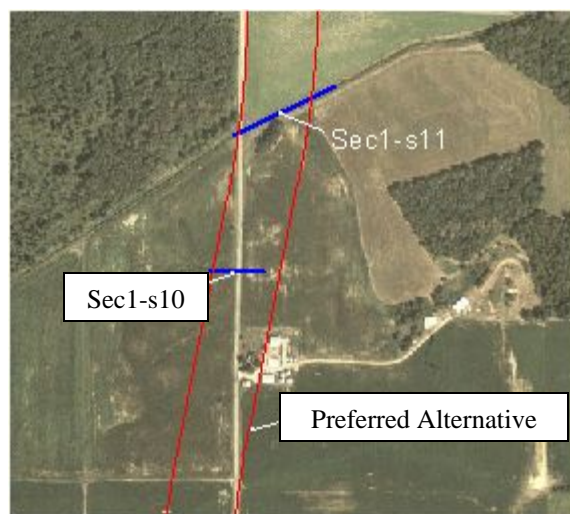
Photograph Looking Downstream



## Stream Impact #10 (Stream ID - Sec 1-s10)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Pigeon Ck/Snake Run
<b>Stream Name:</b>	Unnamed Trib. to Pigeon Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NE ¼ Section 36 T3S R10W	<b>OHWM Width ft:</b>	1
<b>UTME:</b>	459,149	<b>OHWM Depth ft:</b>	0.5
<b>UTMN:</b>	4,229,787	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Elberfeld	<b>IDEM Jurisdiction:</b>	Yes

### Stream Sec 1-s10

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Pigeon Creek	325 feet	0.01 acres	4	HHEI 10/Modified Class I

<b>Stream Type:</b>	Ephemeral
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	10
<b>Watershed Area (square miles):</b>	0.01
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Clay and Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0

## **Stream Impact #10 (Stream ID - Sec 1-s10)**

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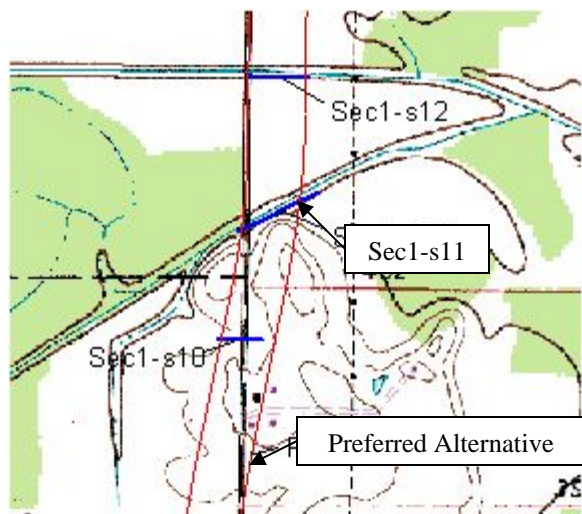
Photograph Looking Upstream



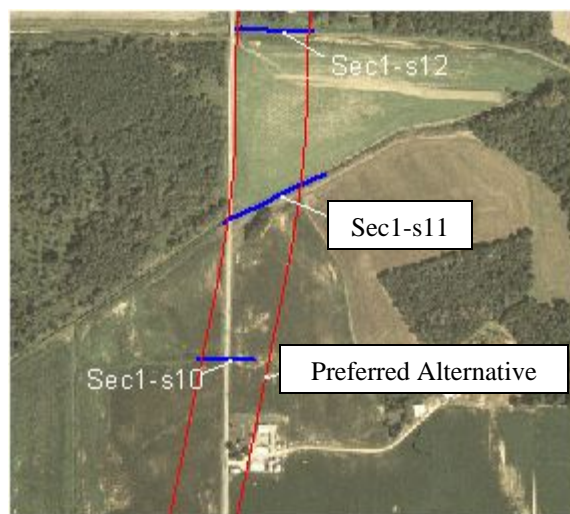
Photograph Looking Downstream



## Stream Impact #11 (Stream ID - Sec 1-s11)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Pigeon Ck/Snake Run
<b>Stream Name:</b>	Unnamed Trib. to Pigeon Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SW ¼ Section 30 T3S R9W	<b>OHWM Width ft:</b>	7
<b>UTME:</b>	459,219	<b>OHWM Depth ft:</b>	2.3
<b>UTMN:</b>	4,230,029	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Elberfeld	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s11				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Pigeon Creek	460 feet	0.07 acres	4	QHEI 23

<b>Stream Type:</b>	Perennial
<b>Evaluation Type:</b>	QHEI
<b>Evaluation Score:</b>	23
<b>Watershed Area (square miles):</b>	5.77
<b>Legal Drain:</b>	Yes
<b>Predominate Substrate:</b>	Sand and Muck
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



## **Stream Impact #11 (Stream ID - Sec 1-s11)**

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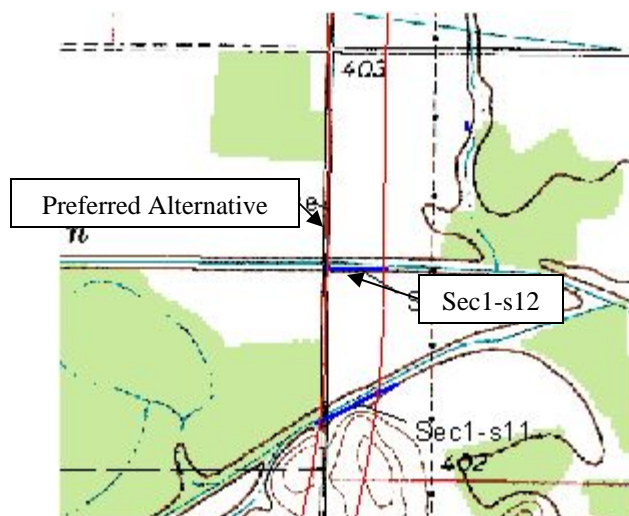
Photograph Looking Upstream



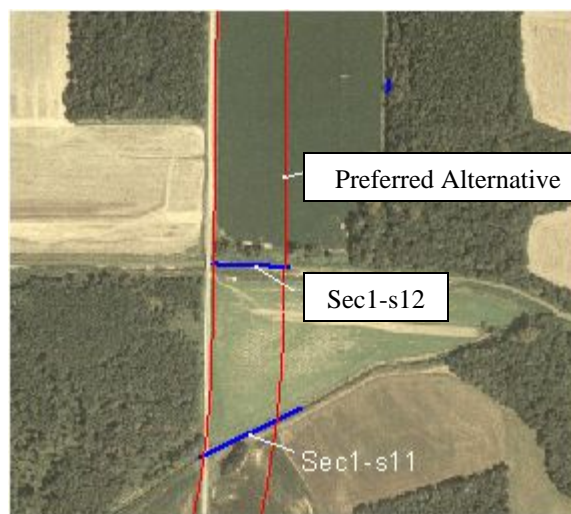
Photograph Looking Downstream



## Stream Impact #12 (Stream ID - Sec 1-s12)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Pigeon Creek  
**County:** Gibson  
**PLSS:** SW ¼ Section 30 T3S R9W  
**UTME:** 459,216  
**UTMN:** 4,230,282  
**USGS Quadrangle:** Elberfeld

**Watershed:** Pigeon Ck/Snake Run  
**Channelized:** Yes  
**IDEM 303(d) List:** No  
**OHWM Width ft:** 21  
**OHWM Depth ft:** 2.7  
**USACE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes

### Stream Sec 1-s12

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Pigeon Creek	385 feet	0.19 acre	4	QHEI 19

**Stream Type:** Perennial  
**Evaluation Type:** QHEI  
**Evaluation Score:** 19  
**Watershed Area (square miles):** 98.2  
**Legal Drain:** Yes  
**Predominate Substrate:** Sand and Silt  
**Estimated Riparian Width (feet):** 10  
**Estimated Riparian Area (acres):** 0.08

## **Stream Impact #12 (Stream ID - Sec 1-s12)**

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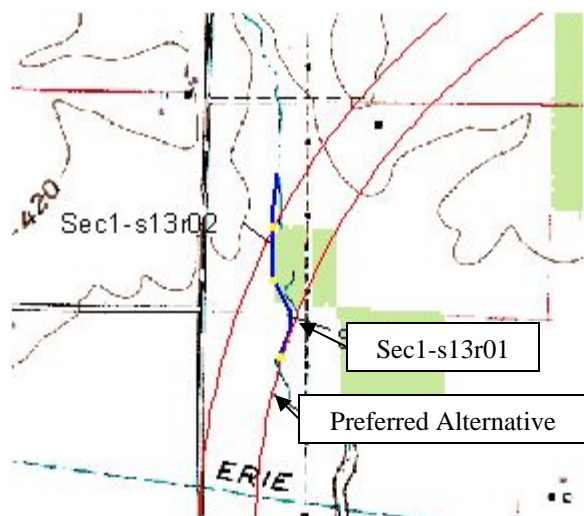
Photograph Looking Upstream



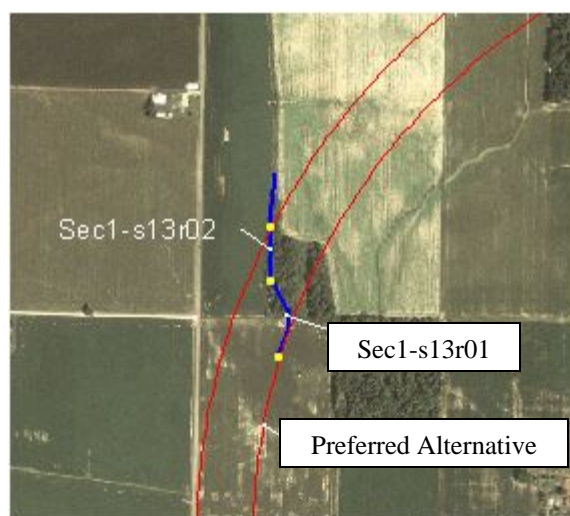
Photograph Looking Downstream



## Stream Impact #13 (Stream ID - Sec 1-s13r01)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Pigeon Ck/Snake Run
<b>Stream Name:</b>	Unnamed Trib. to Pigeon Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NW ¼ Section 30 T3S R9W	<b>OHWM Width ft:</b>	8
<b>UTME:</b>	459,339	<b>OHWM Depth ft:</b>	2
<b>UTMN:</b>	4,231,104	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Elberfeld	<b>IDEM Jurisdiction:</b>	Yes

### Stream Sec 1-s13r01

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Pigeon Creek	330 feet	0.06 acres	4	QHEI 22

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	QHEI
<b>Evaluation Score:</b>	22
<b>Watershed Area (square miles):</b>	1.67
<b>Legal Drain:</b>	Yes
<b>Predominate Substrate:</b>	Clay and Silt
<b>Estimated Riparian Width (feet):</b>	180
<b>Estimated Riparian Area (acres):</b>	1.36

## **Stream Impact #13 (Stream ID - Sec 1-s13r01)**

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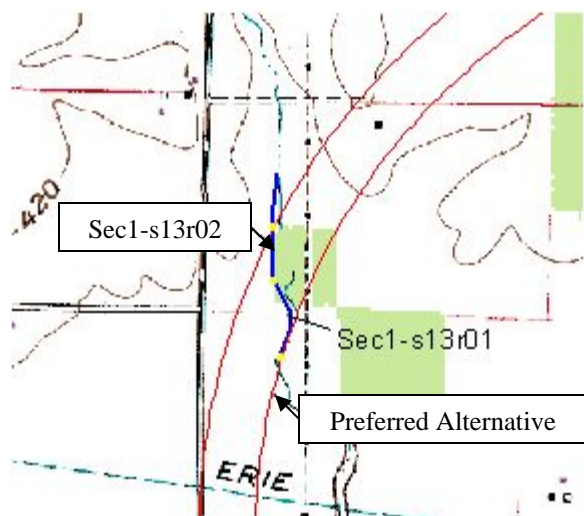


Photograph Looking Upstream

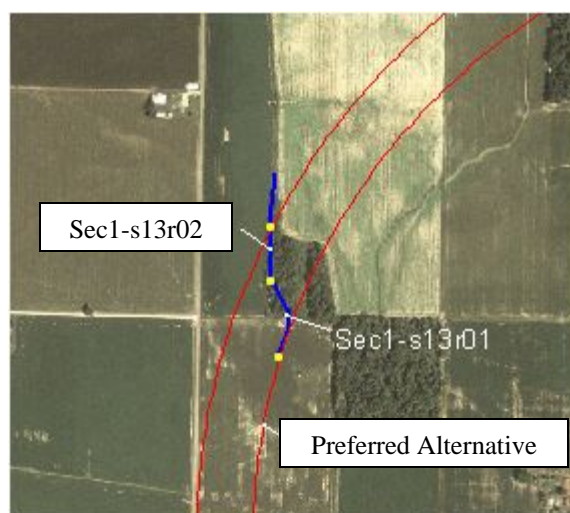


Photograph taken looking downstream

## Stream Impact #13 (Stream ID - Sec 1-s13r02)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Pigeon Ck/Snake Run
<b>Stream Name:</b>	Unnamed Trib. to Pigeon Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NW ¼ Section 30 T3S R9W	<b>OHWM Width ft:</b>	8
<b>UTME:</b>	459,311	<b>OHWM Depth ft:</b>	2.5
<b>UTMN:</b>	4,231,215	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Elberfeld	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s13r02				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Pigeon Creek	600 feet	0.11 acre	4	QHEI 27

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	QHEI
<b>Evaluation Score:</b>	27
<b>Watershed Area (square miles):</b>	1.46
<b>Legal Drain:</b>	Yes
<b>Predominate Substrate:</b>	Clay and Sand
<b>Estimated Riparian Width (feet):</b>	100
<b>Estimated Riparian Area (acres):</b>	1.2



## **Stream Impact #13 (Stream ID - Sec 1-s13r02)**

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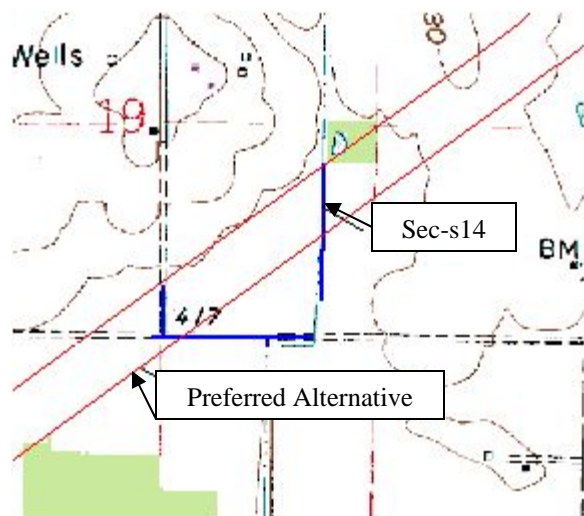
Photograph Looking Upstream



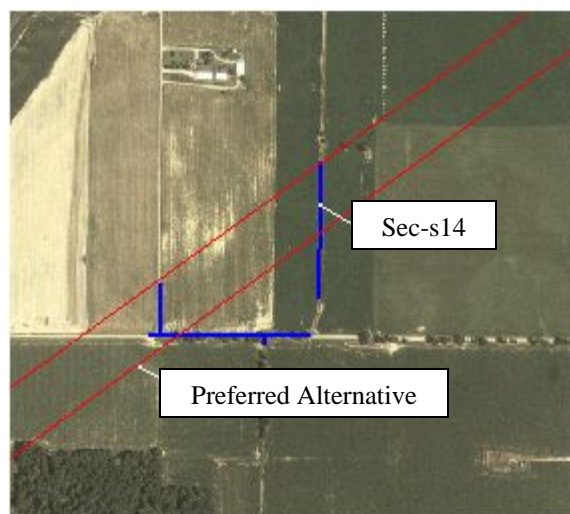
Photograph Looking Downstream



## Stream Impact #14 (Stream ID - Sec 1-s14)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon Ck
<b>Stream Name:</b>	Unnamed Trib. to Pigeon Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SE ¼ Section 19 T3S R9W	<b>OHWM Width ft:</b>	5
<b>UTME:</b>	460,400	<b>OHWM Depth ft:</b>	2
<b>UTMN:</b>	4,232,148	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Elberfeld	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s14				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Pigeon Creek	540 feet	0.06 acre	4	HHEI 25/Modified Class I

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	25
<b>Watershed Area (square miles):</b>	0.43
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Clay
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



## **Stream Impact #14 (Stream ID - Sec 1-s14)**

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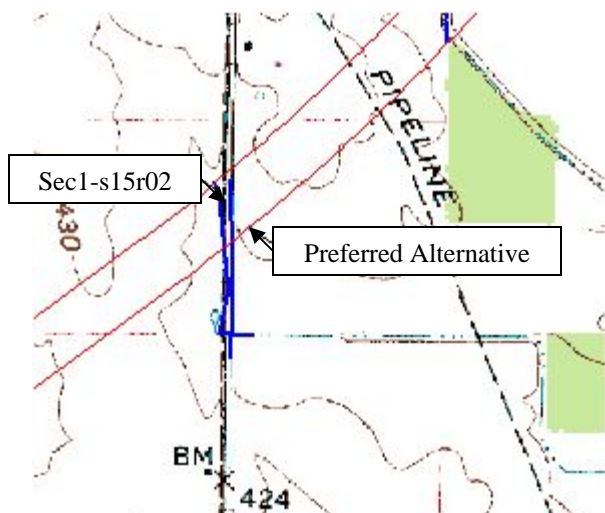
Photograph Looking Upstream



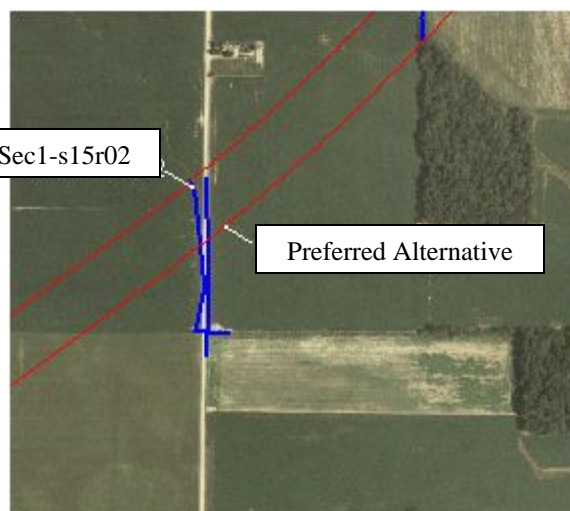
Photograph Looking Downstream



## Stream Impact #15 (Stream ID - Sec 1-s15r02)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon Ck
<b>Stream Name:</b>	Unnamed Trib. to Smith Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NE ¼ Section 19 T3S R9W	<b>OHWM Width ft:</b>	2.5
<b>UTME:</b>	460,892	<b>OHWM Depth ft:</b>	0.8
<b>UTMN:</b>	4,232,513	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Elberfeld	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s15r02				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Smith Creek	380 feet	0.02 acre	4	HHEI 20/Modified Class I

<b>Stream Type:</b>	Ephemeral
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	20
<b>Watershed Area (square miles):</b>	0.04
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



## **Stream Impact #15 (Stream ID - Sec 1-s15r02)**

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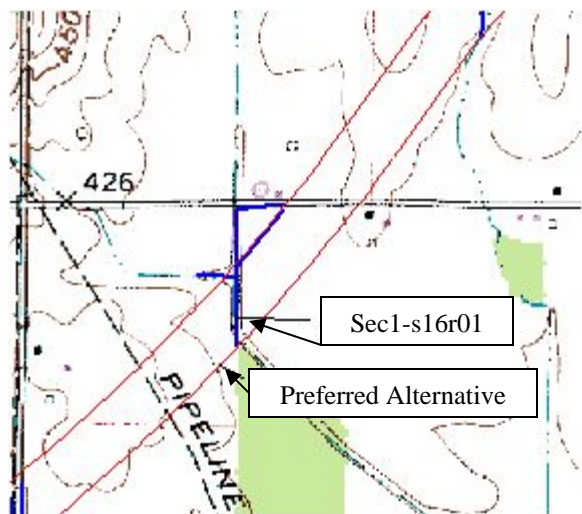
Photograph Looking Upstream



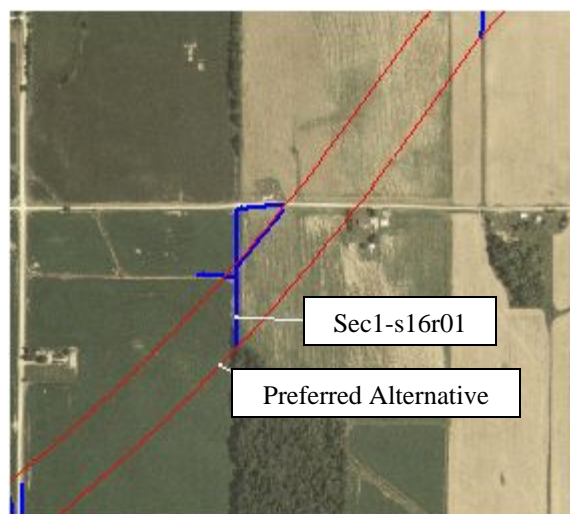
Photograph Looking Downstream



## Stream Impact #16 (Stream ID - Sec 1-s16r01)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon Ck
<b>Stream Name:</b>	Unnamed Trib. to Smith Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NW ¼ Section 20 T3S R9W	<b>OHWM Width ft:</b>	7.5
<b>UTME:</b>	461,318	<b>OHWM Depth ft:</b>	0.33
<b>UTMN:</b>	4,232,912	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

### Stream Sec 1-s16r01

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Smith Creek	565 feet	0.10 acre	4	HHEI 50/Modified Class II

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	50
<b>Watershed Area (square miles):</b>	0.94
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Gravel
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



## **Stream Impact #16 (Stream ID - Sec 1-s16r01)**

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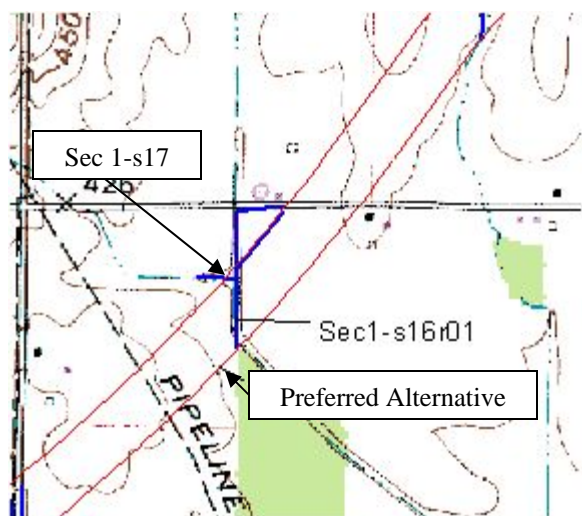
Photograph Looking Upstream



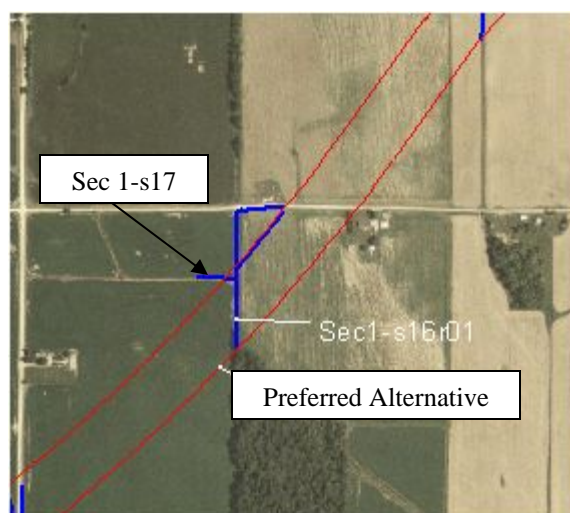
Photograph Looking Downstream



## Stream Impact #17 (Stream ID - Sec 1-s17)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon Ck
<b>Stream Name:</b>	Unnamed Trib. to Smith Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NW ¼ Section 20 T3S R9W	<b>OHWM Width ft:</b>	4
<b>UTME:</b>	461,318	<b>OHWM Depth ft:</b>	1.5
<b>UTMN:</b>	4,232,912	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

### Stream Sec 1-s16r02

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Smith Creek	70 feet	0.01 acre	4	HHEI 29/Modified Class I

<b>Stream Type:</b>	Ephemeral
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	29
<b>Watershed Area (square miles):</b>	0.14
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



## **Stream Impact #17 (Stream ID - Sec 1-s17)**

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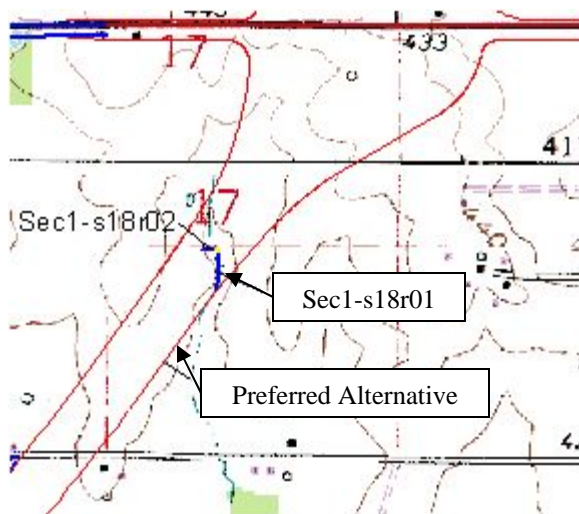
Photograph Looking Upstream



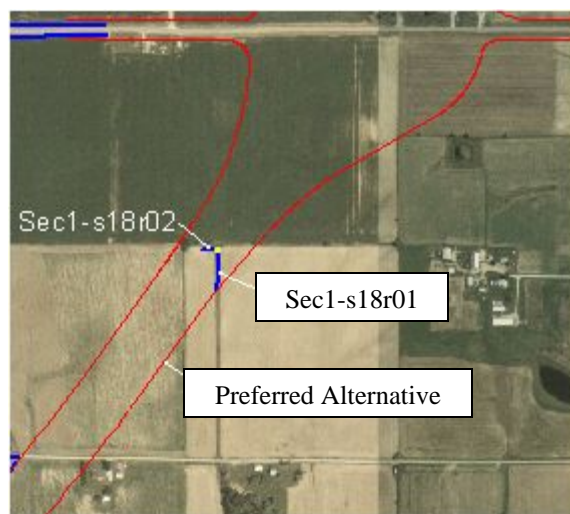
Photograph Looking Downstream



## Stream Impact #18 (Stream ID - Sec 1-s18r01)



Site Location on Elberfeld USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon CK
<b>Stream Name:</b>	Unnamed Trib. to Smith Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SE ¼ Section 17 T3S R9W	<b>OHWM Width ft:</b>	3
<b>UTME:</b>	461,782	<b>OHWM Depth ft:</b>	1.7
<b>UTMN:</b>	4,233,464	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Elberfeld	<b>IDEM Jurisdiction:</b>	Yes

### Stream Sec 1-s18r01

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Smith Creek	125 feet	0.01 acre	4	HHEI 25/Modified Class I

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	25
<b>Watershed Area (square miles):</b>	0.09
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Silt and Clay
<b>Estimated Riparian Width (feet):</b>	8.2
<b>Estimated Riparian Area (acres):</b>	0.02



## **Stream Impact #18 (Stream ID - Sec 1-s18r01)**

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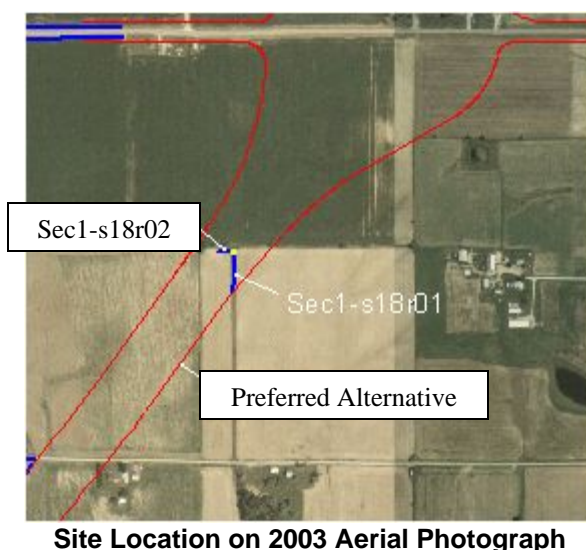
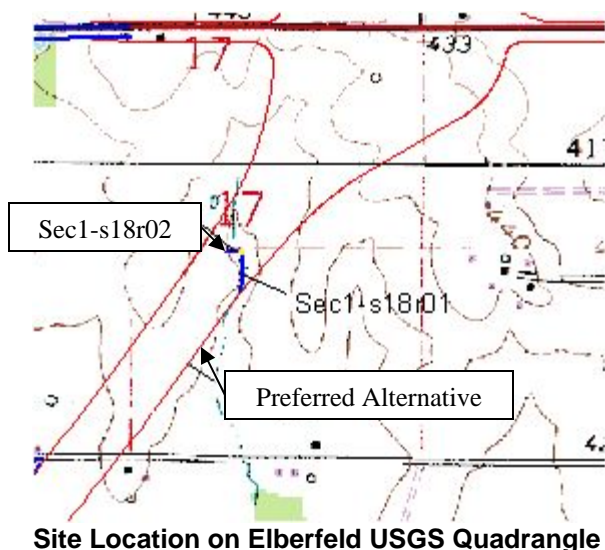
Photograph Looking Upstream



Photograph Looking Downstream



## Stream Impact #19 (Stream ID - Sec 1-s18r02)



<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon CK
<b>Stream Name:</b>	Unnamed Trib. to Smith Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SE ¼ Section 17 T3S R9W	<b>OHWM Width ft:</b>	3
<b>UTME:</b>	461,764	<b>OHWM Depth ft:</b>	1.7
<b>UTMN:</b>	4,233,495	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Elberfeld	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s18r02				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Smith Creek	275 feet	0.02 acre	4	HHEI 9/Modified Class I

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	9
<b>Watershed Area (square miles):</b>	0.10
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



**Stream Impact #19 (Stream ID - Sec 1-s18r02)**

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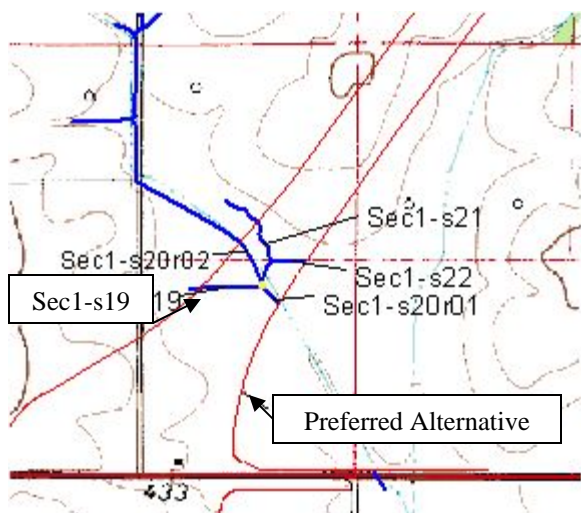
Photograph Looking Upstream



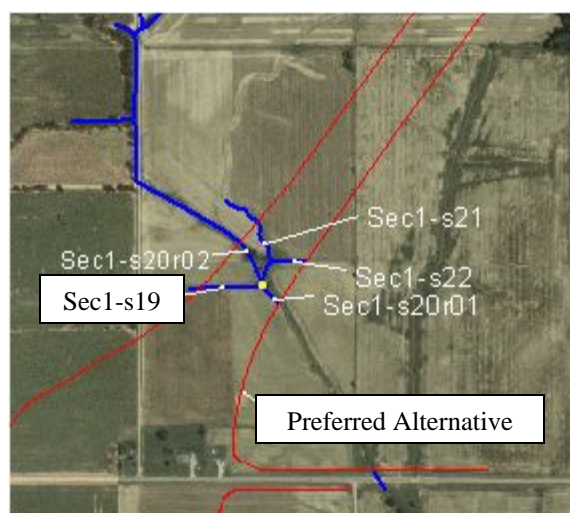
Photograph Looking Downstream



## Stream Impact #20 (Stream ID - Sec 1-s19)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon Ck
<b>Stream Name:</b>	Unnamed Trib. to Smith Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NE ¼ Section 17 T3S R9W	<b>OHWM Width ft:</b>	3
<b>UTME:</b>	462,283	<b>OHWM Depth ft:</b>	1.5
<b>UTMN:</b>	4,234,265	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s19				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Smith Creek	395 feet	0.03 acre	4	HHEI 10/Modified Class I

<b>Stream Type:</b>	Ephemeral
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	10
<b>Watershed Area (square miles):</b>	0.06
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



## **Stream Impact #20 (Stream ID - Sec 1-s19)**

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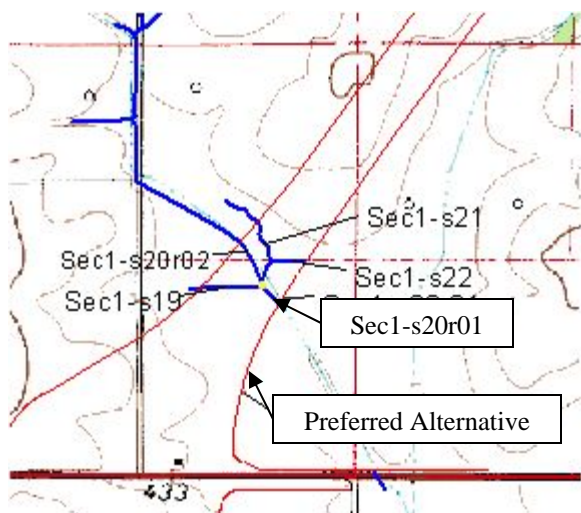
Photograph Looking Upstream



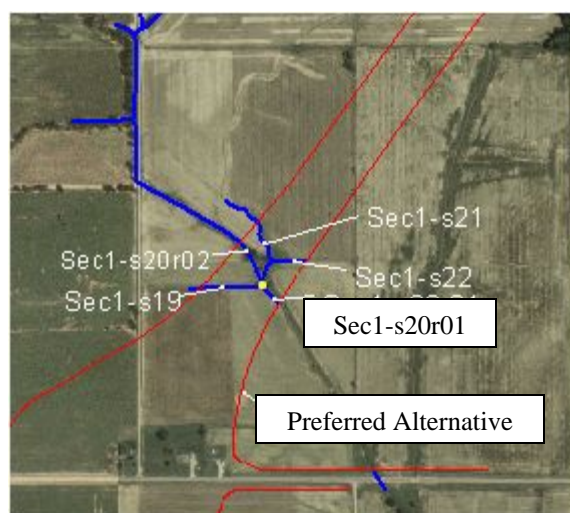
Photograph Looking Downstream



## Stream Impact #21 (Stream ID - Sec 1-s20r01)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon Ck
<b>Stream Name:</b>	Unnamed Trib. to Smith Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NE ¼ Section 17 T3S R9W	<b>OHWM Width ft:</b>	10
<b>UTME:</b>	462,361	<b>OHWM Depth ft:</b>	2
<b>UTMN:</b>	4,234,252	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s20r01				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Smith Creek	190 feet	0.04 acre	4	QHEI 37

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	QHEI
<b>Evaluation Score:</b>	37
<b>Watershed Area (square miles):</b>	1.46
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Silt and Gravel
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



**Stream Impact #21 (Stream ID - Sec 1-s20r01)**

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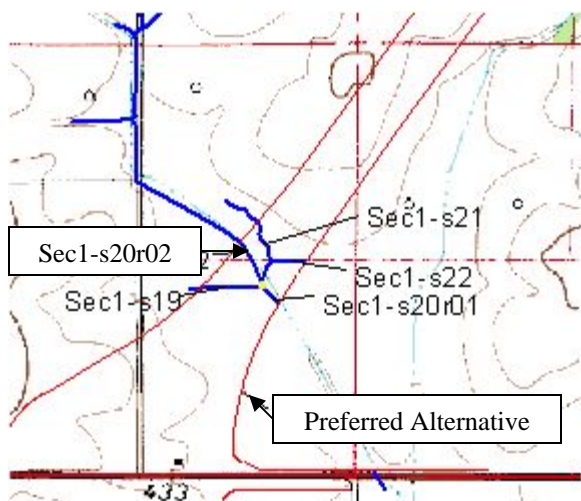
Photograph Looking Upstream



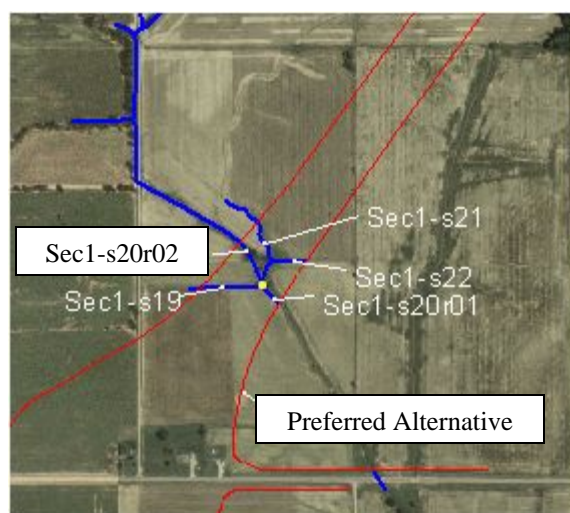
Photograph Looking Downstream



## Stream Impact #21 (Stream ID - Sec 1-s20r02)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon Ck
<b>Stream Name:</b>	Unnamed Trib. to Smith Creek	<b>Channelized:</b>	No
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NE ¼ Section 17 T3S R9W	<b>OHWM Width ft:</b>	10
<b>UTME:</b>	462,325	<b>OHWM Depth ft:</b>	2
<b>UTMN:</b>	4,234,322	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s20r02				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Smith Creek	565 feet	0.13 acre	4	QHEI 25

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	QHEI
<b>Evaluation Score:</b>	25
<b>Watershed Area (square miles):</b>	1.33
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Silt and Hardpan
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



**Stream Impact #21 (Stream ID - Sec 1-s20r02)**

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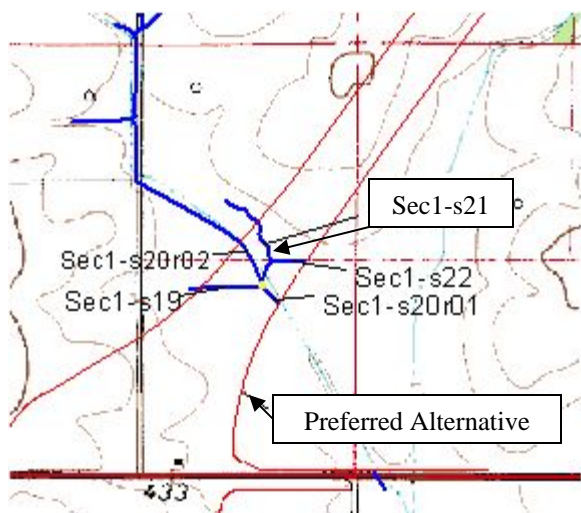
Photograph Looking Upstream



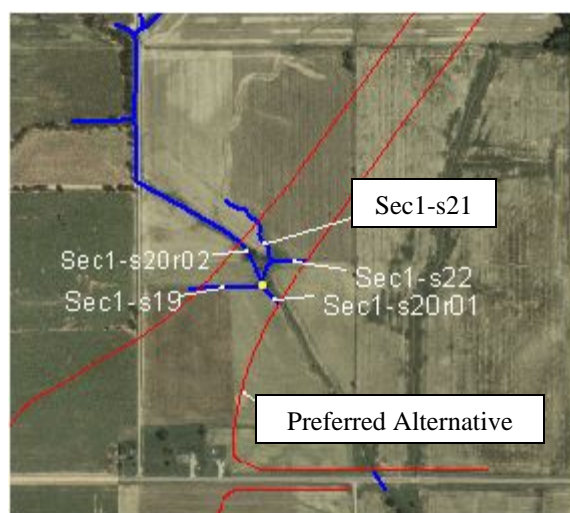
Photograph Looking Downstream



## Stream Impact #22 (Stream ID - Sec 1-s21)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon Ck
<b>Stream Name:</b>	Unnamed Trib. to Smith Creek	<b>Channelized:</b>	No
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NE ¼ Section 17 T3S R9W	<b>OHWM Width ft:</b>	3
<b>UTME:</b>	462,350	<b>OHWM Depth ft:</b>	1
<b>UTMN:</b>	4,234,355	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s21				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Smith Creek	295 feet	0.02 acre	4	HHEI 25/Modified Class I

<b>Stream Type:</b>	Ephemeral
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	25
<b>Watershed Area (square miles):</b>	0.02
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



**Stream Impact #22 (Stream ID - Sec 1-s21)**

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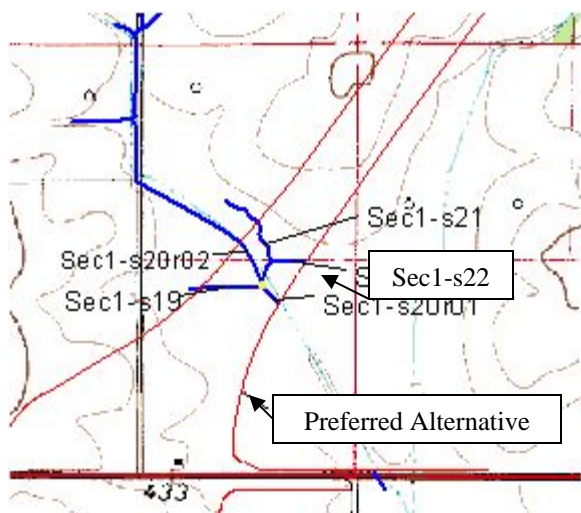
Photograph Looking Upstream



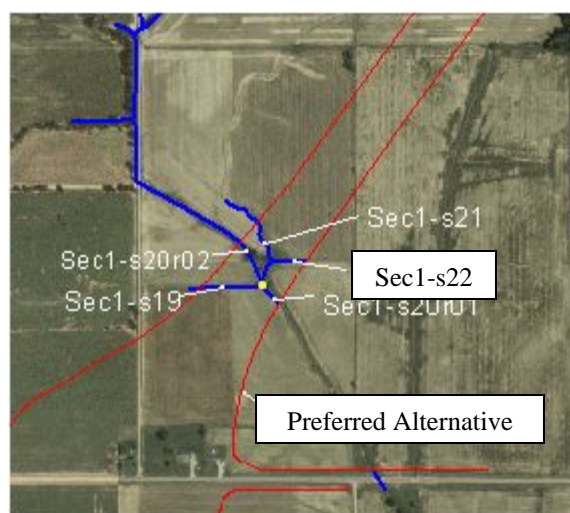
Photograph Looking Downstream



## Stream Impact #23 (Stream ID - Sec 1-s22)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon Ck
<b>Stream Name:</b>	Unnamed Trib. to Smith Creek	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NE ¼ Section 17 T3S R9W	<b>OHWM Width ft:</b>	3
<b>UTME:</b>	462,397	<b>OHWM Depth ft:</b>	1
<b>UTMN:</b>	4,234,317	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s22				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Smith Creek	405 feet	0.03 acre	4	HHEI 10/Modified Class I

<b>Stream Type:</b>	Ephemeral
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	10
<b>Watershed Area (square miles):</b>	0.01
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



## **Stream Impact #23 (Stream ID - Sec 1-s22)**

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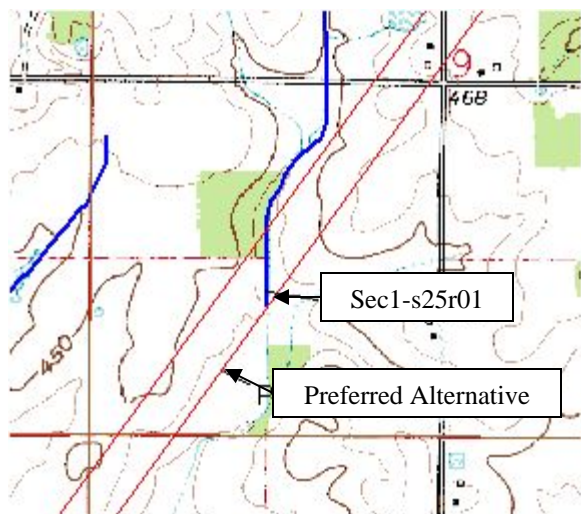
Photograph Looking Upstream



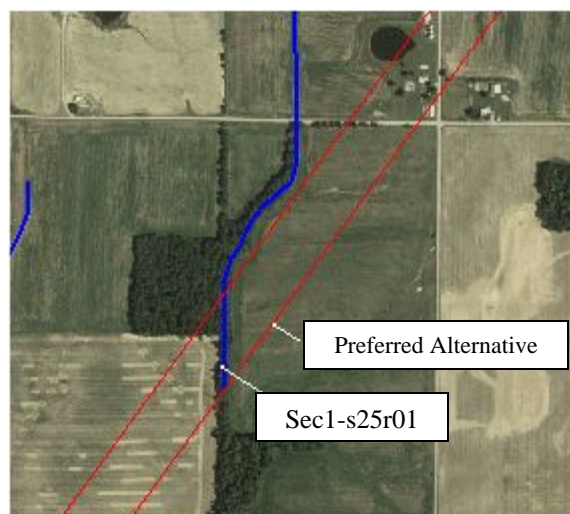
Photograph Looking Downstream



## Stream Impact #24 (Stream ID - Sec 1-s25r01)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon Ck
<b>Stream Name:</b>	Unnamed Trib. to Smith Creek	<b>Channelized:</b>	No
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SW ¼ Section 9 T3S R9W	<b>OHWM Width ft:</b>	12
<b>UTME:</b>	462,939	<b>OHWM Depth ft:</b>	2
<b>UTMN:</b>	4,235,102	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s25r01				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Smith Creek	660 feet	0.18 acre	4	HHEI 61/Modified Class II

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	61
<b>Watershed Area (square miles):</b>	0.31
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Gravel
<b>Estimated Riparian Width (feet):</b>	15
<b>Estimated Riparian Area (acres):</b>	0.21



**Stream Impact #24 (Stream ID - Sec 1-s25r01)**

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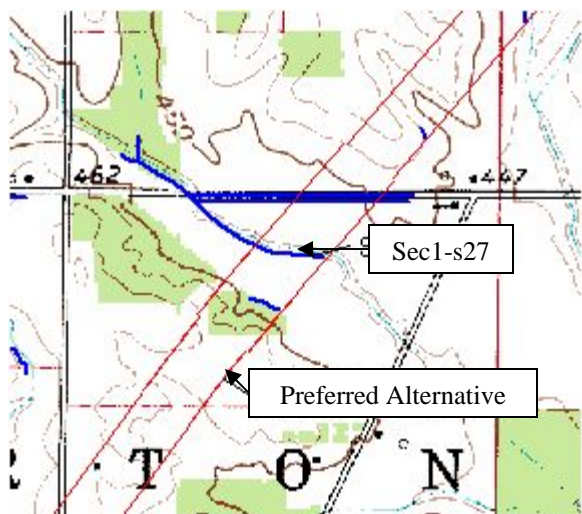
Photograph Looking Upstream



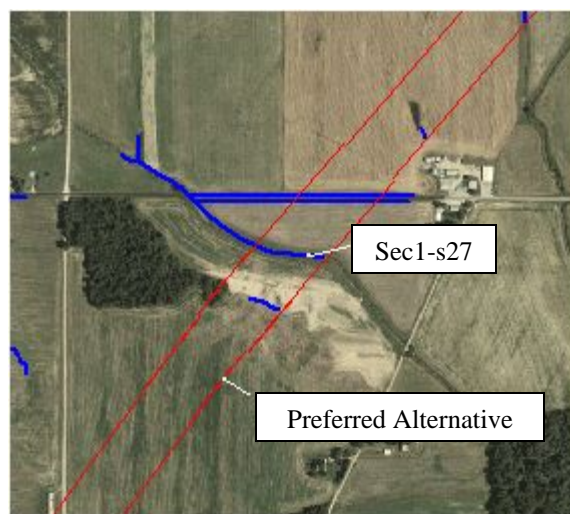
Photograph Looking Downstream



## Stream Impact #25 (Stream ID - Sec 1-s27)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** Halfmoon Ditch  
**County:** Gibson  
**PLSS:** NE ¼ Section 9 T3S R9W  
**UTME:** 463,747  
**UTMN:** 4,236,224  
**USGS Quadrangle:** Francisco

**Watershed:** Smith Fk/Halfmoon Ck  
**Channelized:** No  
**IDEM 303(d) List:** No  
**OHWM Width ft:** 12  
**OHWM Depth ft:** 2  
**USACE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes

### Stream Sec 1-s27

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Halfmoon Ditch	450 feet	0.12 acre	4	QHEI 23

**Stream Type:** Intermittent  
**Evaluation Type:** QHEI  
**Evaluation Score:** 23  
**Watershed Area (square miles):** 1.02  
**Legal Drain:** No  
**Predominate Substrate:** Gravel and Hardpan  
**Estimated Riparian Width (feet):** 0  
**Estimated Riparian Area (acres):** 0



## **Stream Impact #25 (Stream ID - Sec 1-s27)**

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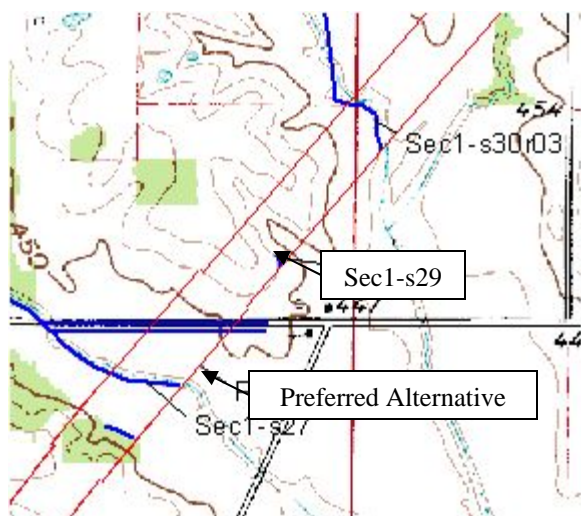
Photograph Looking Upstream



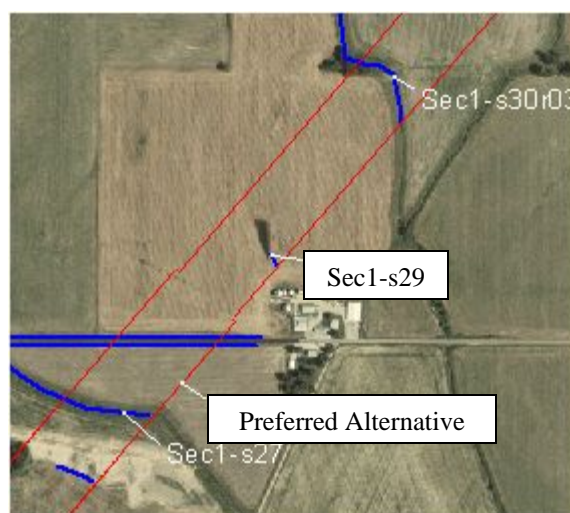
Photograph Looking Downstream



## Stream Impact #26 (Stream ID - Sec 1-s29)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon Ck
<b>Stream Name:</b>	Unnamed Trib. to Halfmoon Ditch	<b>Channelized:</b>	No
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SE ¼ Section 4 T3S R9W	<b>OHWM Width ft:</b>	No OHWM
<b>UTME:</b>	464,012	<b>OHWM Depth ft:</b>	No OHWM
<b>UTMN:</b>	4,236,443	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s29				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Halfmoon Ditch	100 feet	0.01 acre	4	HHEI 10/Modified Class I

<b>Stream Type:</b>	Ephemeral
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	10
<b>Watershed Area (square miles):</b>	0.02
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Clay
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



**Stream Impact #26 (Stream ID - Sec 1-s29)**

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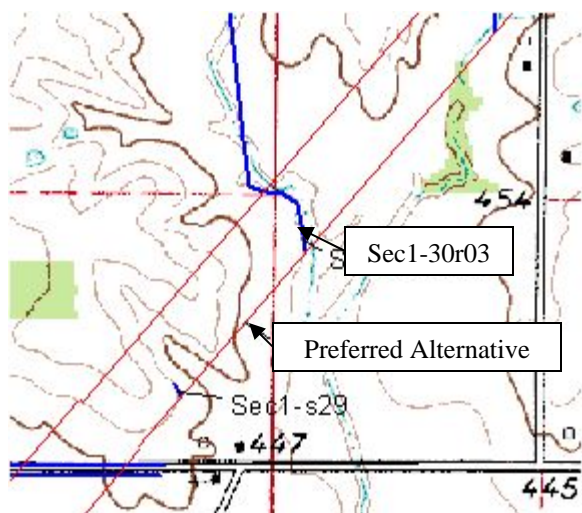


Photograph Looking Upstream

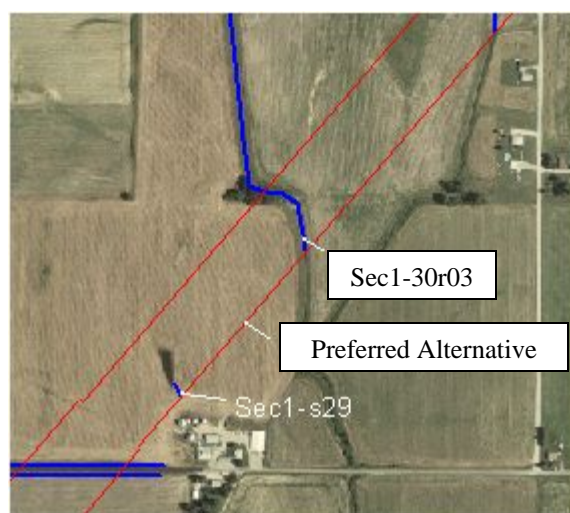


Photograph Looking Downstream

## Stream Impact #27 (Stream ID - Sec 1-s30r03)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon Ck
<b>Stream Name:</b>	Unnamed Trib. to Halfmoon Creek	<b>Channelized:</b>	No
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SW ¼ Section 3 T3S R9W	<b>OHWM Width ft:</b>	12
<b>UTME:</b>	464,193	<b>OHWM Depth ft:</b>	2
<b>UTMN:</b>	4,236,720	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

### Stream Sec 1-s30r03

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Halfmoon Creek	465 feet	0.13 acre	4	HHEI 57/Modified Class II

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	57
<b>Watershed Area (square miles):</b>	0.79
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Clay
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



**Stream Impact #27 (Stream ID - Sec 1-s30r03)**

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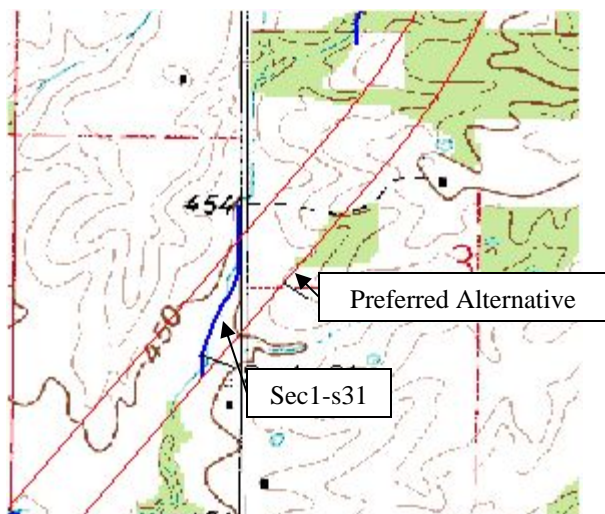


Photograph Looking Upstream

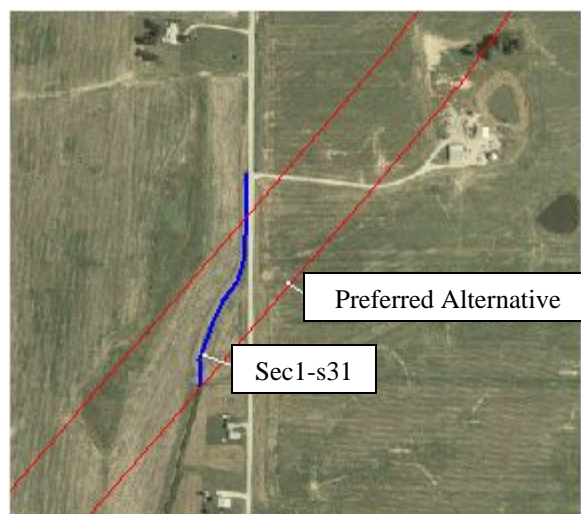


Photograph Looking Downstream

## Stream Impact #28 (Stream ID - Sec 1-s31)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Smith Fk/Halfmoon Ck
<b>Stream Name:</b>	Unnamed Trib. to Halfmoon Ditch	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SW ¼ Section 3 T3S R9W	<b>OHWM Width ft:</b>	4
<b>UTME:</b>	464,519	<b>OHWM Depth ft:</b>	1.2
<b>UTMN:</b>	4,237,093	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

### Stream Sec 1-s31

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to Halfmoon Ditch	915 feet	0.08 acre	4	HHEI 45/Modified Class II

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	45
<b>Watershed Area (square miles):</b>	0.12
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Gravel
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



## **Stream Impact #28 (Stream ID - Sec 1-s31)**

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Photograph Looking Upstream

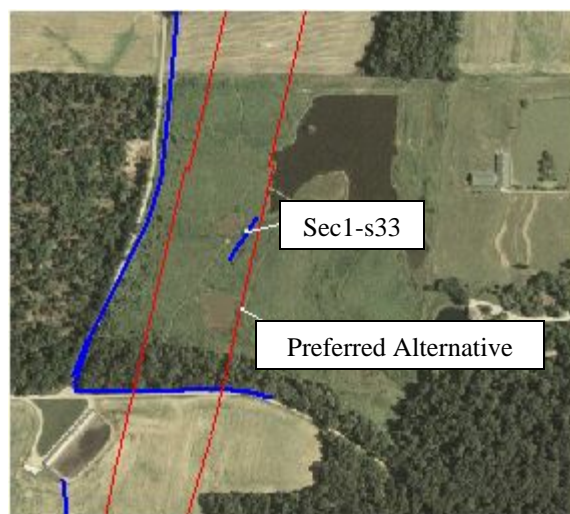


Photograph Looking Downstream

## Stream Impact #29 (Stream ID - Sec 1-s33)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Keg Ck/W. Fork Keg Ck
<b>Stream Name:</b>	Unnamed Trib. to W. Fork Keg Ck	<b>Channelized:</b>	No
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SE ¼ Section 34 T2S R9W	<b>OHWM Width ft:</b>	2
<b>UTME:</b>	465,140	<b>OHWM Depth ft:</b>	0.3
<b>UTMN:</b>	4,238,224	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s33				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to W. Fork Keg Ck	265 feet	0.01 acre	4	HHEI 25/Modified Class I

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	25
<b>Watershed Area (square miles):</b>	0.03
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Silt and Clay
<b>Estimated Riparian Width (feet):</b>	30
<b>Estimated Riparian Area (acres):</b>	0.17



**Stream Impact #29 (Stream ID - Sec 1-s33)**

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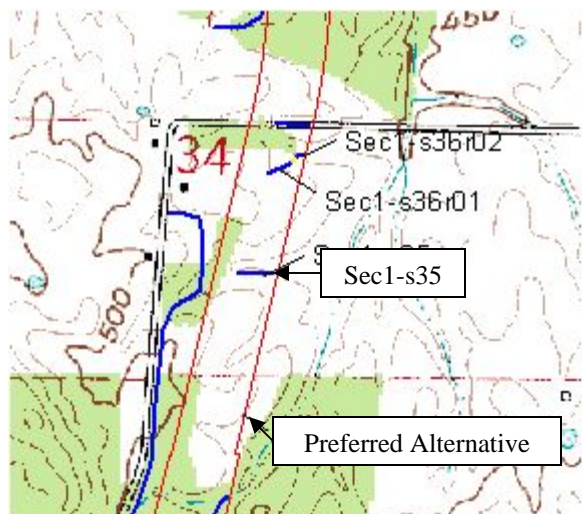


Photograph Looking Upstream

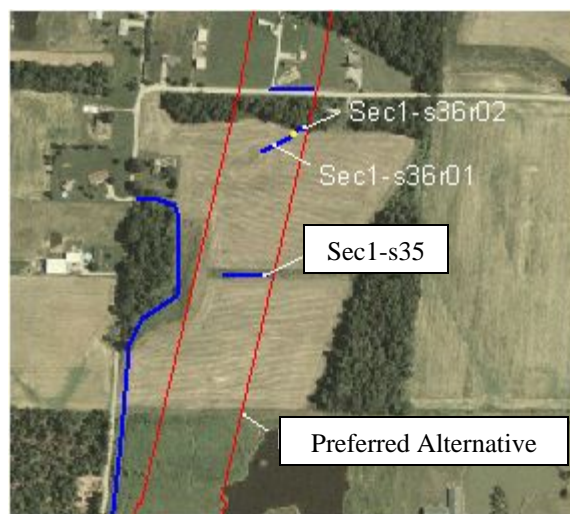


Photograph Looking Downstream

## Stream Impact #30 (Stream ID - Sec 1-s35)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Keg Ck/W. Fork Keg Ck
<b>Stream Name:</b>	Unnamed Trib. to W. Fork Keg Ck	<b>Channelized:</b>	No
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SE ¼ Section 34 T2S R9W	<b>OHWM Width ft:</b>	2
<b>UTME:</b>	465,210	<b>OHWM Depth ft:</b>	0.8
<b>UTMN:</b>	4,238,641	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s35				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to W. Fork Keg Ck	260 feet	0.01 acre	4	HHEI 10/Modified Class I

<b>Stream Type:</b>	Ephemeral
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	10
<b>Watershed Area (square miles):</b>	0.01
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Clay and Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



**Stream Impact #30 (Stream ID - Sec 1-s35)**

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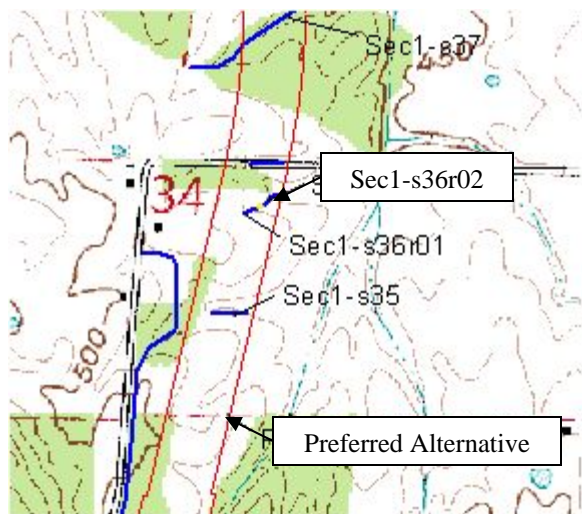


Photograph Looking Upstream

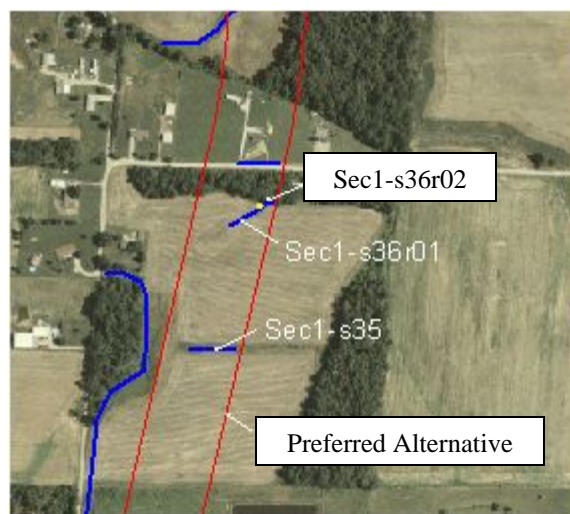


Photograph Looking Downstream

## Stream Impact #31 (Stream ID - Sec 1-s36r02)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Keg Ck/W. Fork Keg Ck
<b>Stream Name:</b>	Unnamed Trib. to W. Fork Keg Ck	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SE ¼ Section 34 T2S R9W	<b>OHWM Width ft:</b>	2
<b>UTME:</b>	465,289	<b>OHWM Depth ft:</b>	0.3
<b>UTMN:</b>	4,238,845	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s36r02				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to W. Fork Keg Ck	66 feet	0.01 acre	4	HHEI 10/Modified Class I

<b>Stream Type:</b>	Ephemeral
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	10
<b>Watershed Area (square miles):</b>	0.01
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Clay
<b>Estimated Riparian Width (feet):</b>	100
<b>Estimated Riparian Area (acres):</b>	0.14



**Stream Impact #31 (Stream ID - Sec 1-s36r02)**

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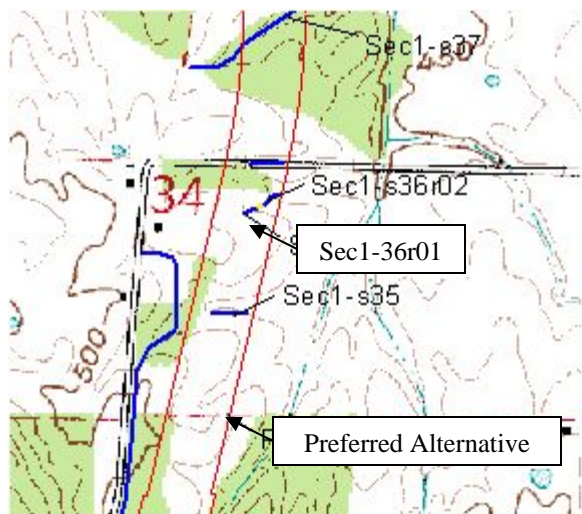


Photograph Looking Upstream

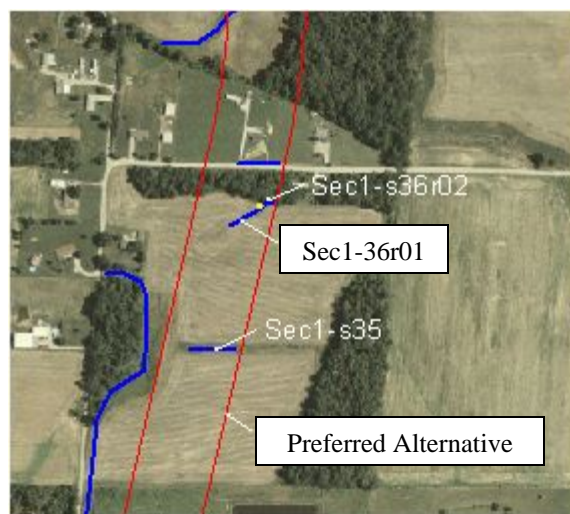


Photograph Looking Downstream

## Stream Impact #32 (Stream ID - Sec 1-s36r01)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Keg Ck/W. Fork Keg Ck
<b>Stream Name:</b>	Unnamed Trib. to W. Fork Keg Ck	<b>Channelized:</b>	No
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SE ¼ Section 34 T2S R9W	<b>OHWB Width ft:</b>	2
<b>UTME:</b>	465,265	<b>OHWB Depth ft:</b>	0.3
<b>UTMN:</b>	4,238,825	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

### Stream Sec 1-s36r01

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to W. Fork Keg Ck	225 feet	0.01 acre	4	HHEI 9/Modified Class I

<b>Stream Type:</b>	Ephemeral
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	9
<b>Watershed Area (square miles):</b>	0.01
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



**Stream Impact #32 (Stream ID - Sec 1-s36r01)**

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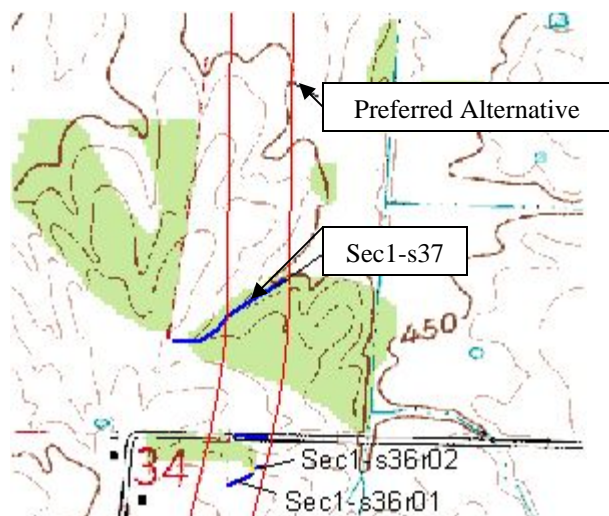


Photograph Looking Upstream

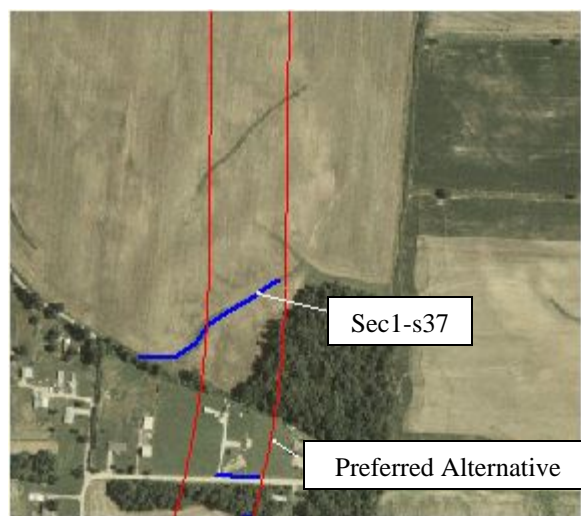


Photograph Looking Downstream

## Stream Impact #33 (Stream ID - Sec 1-s37)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Keg Ck/W. Fork Keg Ck
<b>Stream Name:</b>	Unnamed Trib. to W. Fork Keg Ck	<b>Channelized:</b>	No
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NE ¼ Section 34 T2S R9W	<b>OHWM Width ft:</b>	1
<b>UTME:</b>	465,274	<b>OHWM Depth ft:</b>	0.4
<b>UTMN:</b>	4,239,134	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s37				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to W. Fork Keg Ck	495 feet	0.01 acre	4	HHEI 10/Modified Class I

<b>Stream Type:</b>	Ephemeral
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	10
<b>Watershed Area (square miles):</b>	0.04
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Clay and Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



## **Stream Impact #33 (Stream ID - Sec 1-s37)**

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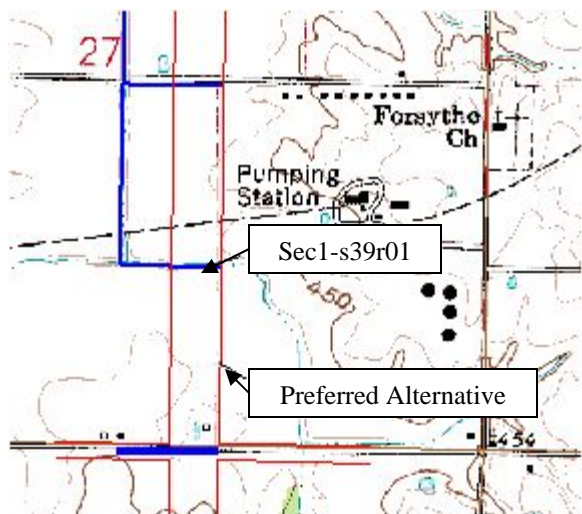


Photograph Looking Upstream

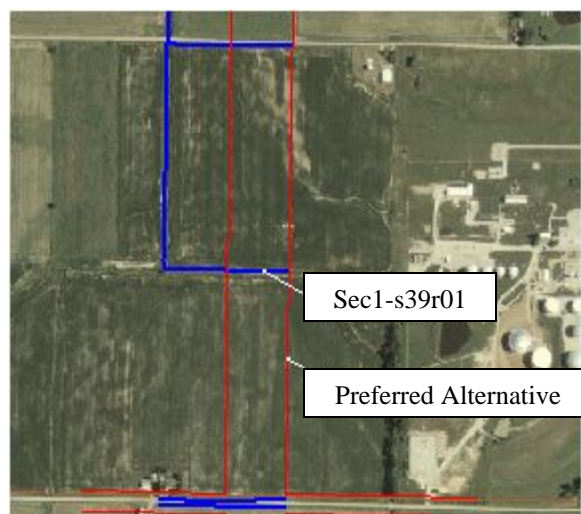


Photograph Looking Downstream

## Stream Impact #34, #39, and #40 (Stream ID - Sec 1-s39r01)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

**Aquatic Resource:** Stream  
**Stream Name:** West Fork Keg Ck  
**County:** Gibson  
**PLSS:** SE ¼ Section 27 T2S R9W  
**UTME:** 465,305  
**UTMN:** 4,240,102  
**USGS Quadrangle:** Francisco

**Watershed:** Keg Ck/W. Fork Keg Ck  
**Channelized:** No  
**IDEM 303(d) List:** No  
**OHWM Width ft:** 9  
**OHWM Depth ft:** 1.7  
**USACE Jurisdiction:** Yes  
**IDEM Jurisdiction:** Yes

### Stream Sec 1-s39r01

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
West Fork Keg Ck	950 feet	0.20 acre	4	QHEI 32

**Stream Type:** Intermittent  
**Evaluation Type:** QHEI  
**Evaluation Score:** 32  
**Watershed Area (square miles):** 5.11  
**Legal Drain:** No  
**Predominate Substrate:** Gravel and Hardpan  
**Estimated Riparian Width (feet):** 0  
**Estimated Riparian Area (acres):** 0



**Stream Impact #34, #39, and #40 (Stream ID - Sec 1-s39r01)**

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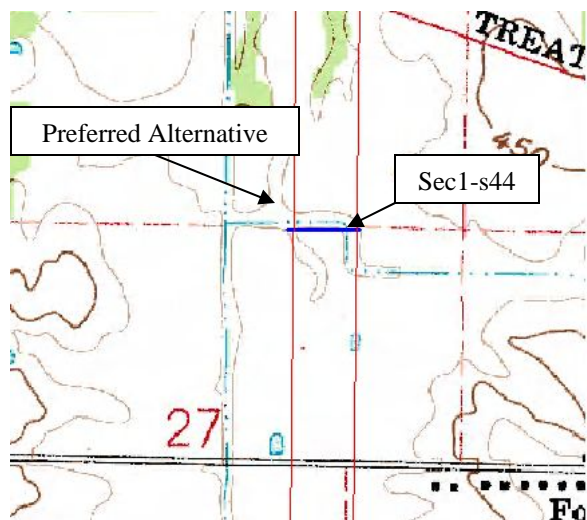


Photograph Looking Upstream

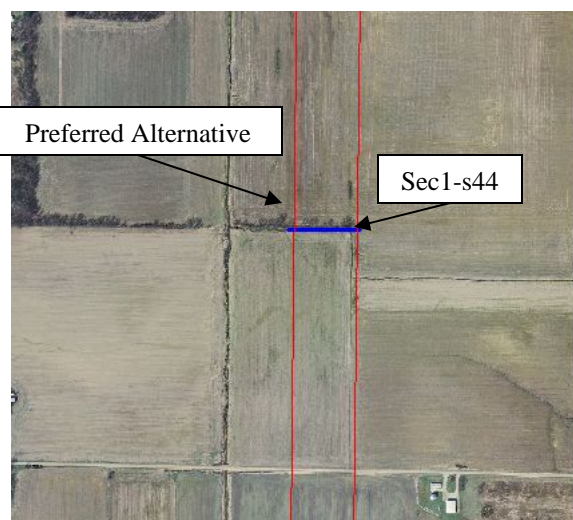


Photograph Looking Downstream

## Stream Impact #35 (Stream ID - Sec 1-s44)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Keg Ck/W. Fork Keg Ck
<b>Stream Name:</b>	Unnamed Trib. to W. Fork Keg Ck	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SE ¼ Section 22 T2S R9W	<b>OHWM Width ft:</b>	3
<b>UTME:</b>	465,327	<b>OHWM Depth ft:</b>	0.4
<b>UTMN:</b>	4,241,536	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s44				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to W. Fork Keg Ck	385 feet	0.03 acre	4	HHEI 35/Modified Class II

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	35
<b>Watershed Area (square miles):</b>	0.22
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Clay and Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



**Stream Impact #35 (Stream ID - Sec 1-s44)**

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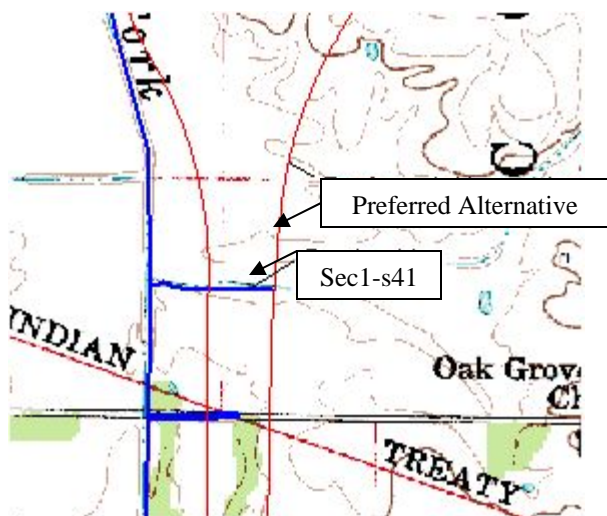


Photograph Looking Upstream

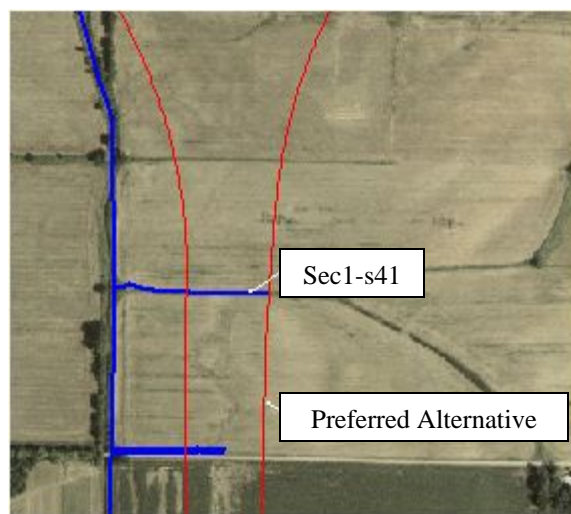


Photograph Looking Downstream

## Stream Impact #36 (Stream ID - Sec 1-s41)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Keg Ck/W. Fork Keg Ck
<b>Stream Name:</b>	Unnamed Trib. to W. Fork Keg Ck	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	SE ¼ Section 22 T2S R9W	<b>OHWM Width ft:</b>	3
<b>UTME:</b>	465,327	<b>OHWM Depth ft:</b>	0.4
<b>UTMN:</b>	4,241,536	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s41				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to W. Fork Keg Ck	385 feet	0.03 acre	4	HHEI 35/Modified Class II

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	35
<b>Watershed Area (square miles):</b>	0.22
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Clay and Silt
<b>Estimated Riparian Width (feet):</b>	0
<b>Estimated Riparian Area (acres):</b>	0



**Stream Impact #36 (Stream ID - Sec 1-s41)**

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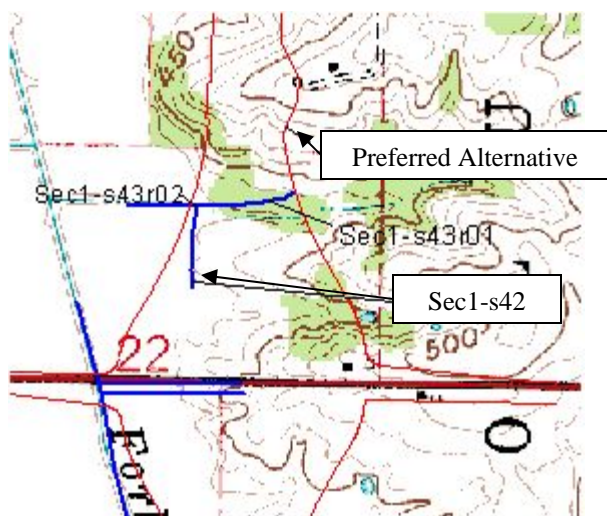


Photograph Looking Upstream

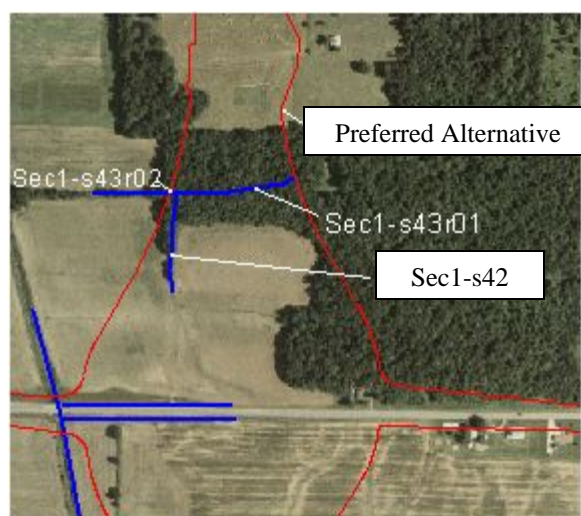


Photograph Looking Downstream

## Stream Impact #37 (Stream ID - Sec 1-s42)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Keg Ck/W. Fork Keg Ck
<b>Stream Name:</b>	Unnamed Trib. to W. Fork Keg Ck	<b>Channelized:</b>	Yes
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NE ¼ Section 22 T2S R9W	<b>OHWM Width ft:</b>	6
<b>UTME:</b>	465,242	<b>OHWM Depth ft:</b>	1.3
<b>UTMN:</b>	4,242,355	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

### Stream Sec 1-s42

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to W. Fork Keg Ck	385 feet	0.05 acre	4	HHEI 29/Modified Class I

<b>Stream Type:</b>	Ephemeral
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	29
<b>Watershed Area (square miles):</b>	0.04
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Silt
<b>Estimated Riparian Width (feet):</b>	20
<b>Estimated Riparian Area (acres):</b>	0.22



**Stream Impact #37 (Stream ID - Sec 1-s42)**

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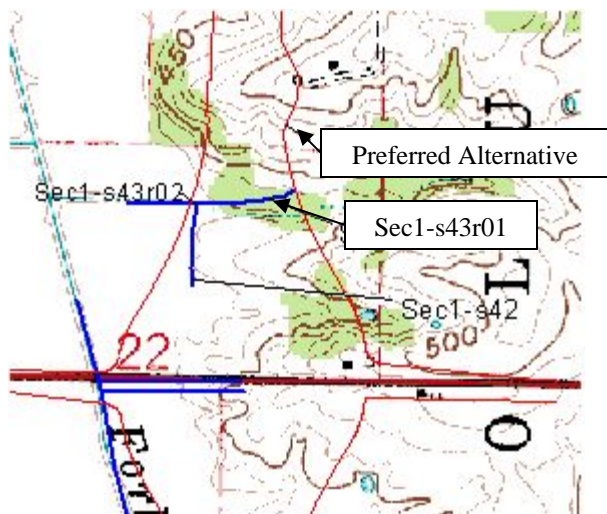


Photograph Looking Upstream

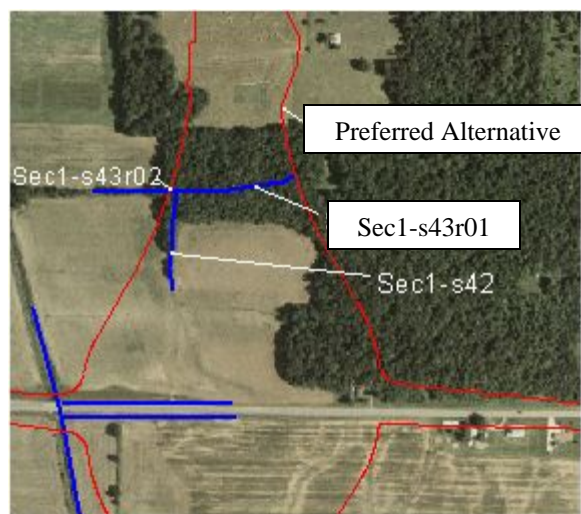


Photograph Looking Downstream

## Stream Impact #38 (Stream ID - Sec 1-s43r01)



Site Location on Francisco USGS Quadrangle



Site Location on 2003 Aerial Photograph

<b>Aquatic Resource:</b>	Stream	<b>Watershed:</b>	Keg Ck/W. Fork Keg Ck
<b>Stream Name:</b>	Unnamed Trib. to W. Fork Keg Ck	<b>Channelized:</b>	No
<b>County:</b>	Gibson	<b>IDEM 303(d) List:</b>	No
<b>PLSS:</b>	NE ¼ Section 22 T2S R9W	<b>OHWM Width ft:</b>	6
<b>UTME:</b>	465,338	<b>OHWM Depth ft:</b>	0.5
<b>UTMN:</b>	4,242,440	<b>USACE Jurisdiction:</b>	Yes
<b>USGS Quadrangle:</b>	Francisco	<b>IDEM Jurisdiction:</b>	Yes

Stream Sec 1-s43r01				
Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to W. Fork Keg Ck	100 feet	0.01 acre	4	HHEI 25/Modified Class I

<b>Stream Type:</b>	Intermittent
<b>Evaluation Type:</b>	HHEI
<b>Evaluation Score:</b>	25
<b>Watershed Area (square miles):</b>	0.10
<b>Legal Drain:</b>	No
<b>Predominate Substrate:</b>	Clay
<b>Estimated Riparian Width (feet):</b>	440
<b>Estimated Riparian Area (acres):</b>	5.6



**Stream Impact #38 (Stream ID - Sec 1-s43r01)**

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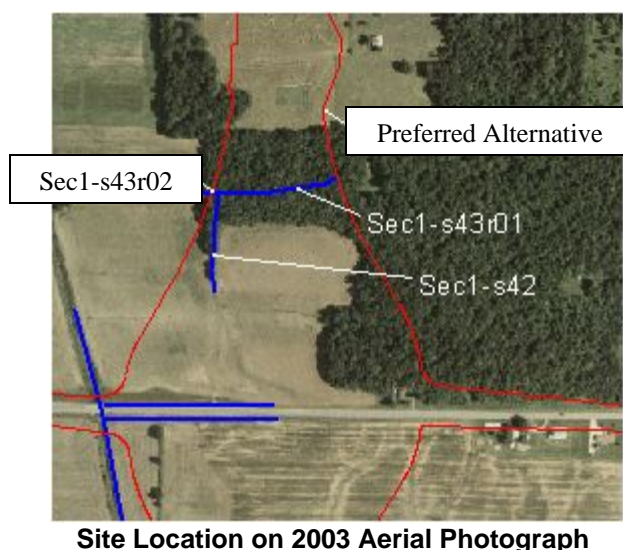
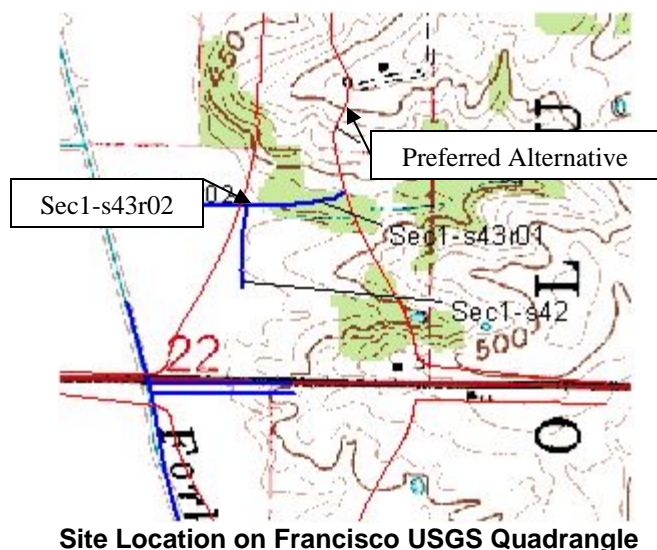


Photograph Looking Upstream



Photograph Looking Downstream

## Stream Impact #38 (Stream ID - Sec 1-s43r02)



**Aquatic Resource:** Stream

**Stream Name:** Unnamed Trib. to W. Fork Keg Ck

**County:** Gibson

**PLSS:** NE ¼ Section 22 T2S R9W

**UTME:** 465,237

**UTMN:** 4,242,440

**USGS Quadrangle:** Francisco

**Watershed:** Keg Ck/W. Fork Keg Ck

**Channelized:** No

**IDEM 303(d) List:** No

**OHWM Width ft:** 6

**OHWM Depth ft:** 0.6

**USACE Jurisdiction:** Yes

**IDEM Jurisdiction:** Yes

### Stream Sec 1-s43r02

Stream Name	Length of Impact	Area Impacted	Alternative	Stream Habitat Assessment
Unnamed Trib. to W. Fork Keg Ck	515 feet	0.07 acre	4	HHEI 22/Modified Class I

**Stream Type:** Intermittent

**Evaluation Type:** HHEI

**Evaluation Score:** 22

**Watershed Area (square miles):** 0.15

**Legal Drain:** No

**Predominate Substrate:** Clay

**Estimated Riparian Width (feet):** 440

**Estimated Riparian Area (acres):** 0.10



**Stream Impact #38 (Stream ID - Sec 1-s43r02)**

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Photograph Looking Upstream



Photograph Looking Downstream

# **401 WQC APPLICATION ATTACHMENT #8**

## **Wetland Delineation Report**



# **Wetland Delineation Report**

## **I-69 Section 1 In Vanderburgh, Warrick, and Gibson Counties, Indiana**

**DES# 0300377**

**August 27, 2007**

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**Prepared for:**

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**Wetland Delineation Report  
I-69 Section 1 Project  
Vanderburgh, Gibson, and Warrick Counties, Indiana**

**I. Project Description**

In general, the project consists of constructing a new roadway in Vanderburgh, Gibson, and Warrick counties, Indiana starting at the interchange of Interstate 64 and State Route 57 and Interstate 164 and continuing in a northward direction on new alignment and ending at State Route 64 just to the west of Oakland City, Indiana. The total length of the project is approximately 13 miles.

The project is located in Vanderburgh, Gibson, and Warrick counties in close proximity to State Route 57 (Attachment #5). The majority of this project is within agricultural settings and small woodlots, with a small portion of residential land (Attachment #6). There are 12 wetland impacts and 2 pond impacts that were identified within the proposed new right-of-way for the I-69 Section 1 Preferred Alternative. Attachment #7 contains impact site forms for each of the 12 wetland impacts and 2 pond impacts associated with this project. Routine Wetland Delineation Forms for each of the 12 wetland impact sites are located in Appendix A. Also included with this report are wetland assessment data sheets completed using the Indiana Wrapped Assessment Protocol (InWRAP) developed by Taylor University (Attachment #15).

**II. Section 404 “Waters of the United States,” “Waters of the State,” and Wetlands**

In 1972 Congress amended the Federal Water Pollution Control Act of 1948 (Clean Water Act) to include Section 404 which regulates the discharge of fill or dredged material into all “waters of the United States.” Guidelines for implementation of the Section 404 program were jointly developed by the Environmental Protection Agency (USEPA) and the Corps of Engineers (USACE). Administration of the program, including issuance of discharge permits, is the responsibility of the USACE. The EPA is however “authorized to prohibit the specification (including the withdrawal of specification) of any defined area as a disposal site” as well as “deny or restrict the use of any defined area for specification (including the withdrawal of specification) as a disposal site...” Section 1 of the I-69 Project is within the jurisdiction of the USACE Louisville District office.

“Waters of the United States” is an all encompassing term used to include a wide range of both deep water aquatic habitats and special aquatic sites. Special aquatic sites are defined as “geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values” [40 CFR 230.3(q-1)]. Six special aquatic site categories have been identified by the EPA [40 CFR 230.40 - 230.45]:

- |                             |                               |
|-----------------------------|-------------------------------|
| (1) sanctuaries and refuges | (4) vegetated shallows        |
| (2) wetlands                | (5) coral reefs               |
| (3) mudflats                | (6) riffle and pool complexes |

Wetlands as defined by the EPA [40 CFR 230.3(t)] and the COE [33 CFR 328.3(b)] include “those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.”

The Indiana Department of Environmental Management (IDEM) regulates “Waters of the State.” IDEM is responsible for issuing Water Quality Certifications (WQC) in Indiana. IDEM is charged with maintaining the chemical, physical and biological integrity of Indiana waters through its WQC program. Section 401 of the Clean Water Act requires any applicant for a federal permit through the USACE to conduct any activity that may result in a discharge of pollutants to water (including wetlands) to first obtain a WQC. If the USACE determines that a federal permit is not needed under Section 404 of the Clean Water Act, authorization by IDEM is still likely needed. This is likely to be the case of “isolated wetlands” where the USACE has determined that it has no basis for federal jurisdiction. IDEM regulates impacts to isolated wetlands under its Isolated Wetlands Regulatory Program (327 IAC 2).

### III. Wetland Determination Methodology

Wetland determinations and delineations were performed in accordance with the *Corps of Engineers Wetland Delineation Manual (1987)* and all subsequent USACE guidance releases. Non-wetland “waters of the United States” were determined and described in accordance with the definitions in 33 CFR 328.3 and the wetland delineation manual. Classifications assigned to those wetlands identified and described in this study follow the classification system developed for the Fish and Wildlife Service, U. S. Department of the Interior, by Cowardin *et al.* (1979).

The *Corps of Engineers Wetland Delineation Manual (1987)* was developed to establish a universal methodology for determining and delineating jurisdictional wetlands. In keeping with the intent of the wetland definition, this methodology was based on a three parameter approach which requires that any one given site exhibit hydrophytic vegetation, hydric soils and wetland hydrology to qualify as a jurisdictional wetland. While normally all three criteria are required in order for such a designation, atypical or problem areas may exist where circumstances are such that only two criteria are necessary. Atypical situations include the unauthorized discharges or clearing of vegetation within a wetland, episodic acts of nature (beaver dams, fires, avalanches, etc.) and man-induced wetlands (impoundments).

#### Hydrophytic Vegetation

The *Corps of Engineers Wetland Delineation Manual* defines hydrophytic vegetation as the “*sum total of macrophytic plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present.*” The USACE places emphasis on the assemblage of plant species rather than on indicator species to assess a sites hydrophytic status. The “prevalence of vegetation” for a specific area is based on the dominant plant species, which characterize the community. The task of determining whether the dominant plant species represent that of a wetland community was simplified through the development of the *National List of Plant Species That Occur in Wetlands* by the U.S. Fish and Wildlife Service (USFWS) in cooperation with the USACE, EPA, and the Soil Conservation Service. The five primary indicator categories used to classify a species’ probability of occurring in a wetland are:

Obligate Wetland (OBL) - Occur almost always (estimated probability >99%) under natural conditions in wetlands

Facultative Wetland (FACW) - Usually occur in wetlands (estimated probability 67% - 99%), but occasionally found in non-wetlands.



Facultative (FAC) - Equally likely to occur in wetlands or non-wetlands (estimated probability 34% - 66%).

Facultative Upland (FACU) - Usually occur in non-wetlands (estimated probability 67% - 99%), but occasionally found in wetlands (estimated probability 1% - 33%).

Obligate Upland (UPL) - Occur in wetland in another region, but occur almost always (estimated probability >99%) under natural conditions in non-wetlands in the region specified.

Each of the Facultative categories may be further qualified by a positive (+) or negative (-) sign to designate relative frequencies toward wetter or drier conditions within that category. The positive sign indicates a frequency toward the higher end of the category (more frequently found in wetlands), while the negative sign indicates a frequency toward the lower end of the category (less frequently found in wetlands). The hydrophytic vegetation criteria is said to be satisfied if more than 50% of the dominant species for each of the vegetative strata are OBL, FACW or FAC (except FAC-).

### Hydric Soils

The National Technical Committee for Hydric Soils defines hydric soils as soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part. The anaerobic conditions hydric soils are subjected to during periodic or permanent inundation or saturation results in the chemical reduction of certain soil components, which are exhibited in the physical attributes of the soil.

Soils are typically described in terms of characteristics such as color, mottling, texture and structure. Soil color documentation is based on the Munsell notation system, which uses a combination of *hue*, *value* and *chroma* variables as descriptors. *Hue* expresses a color's relation to red, yellow, green, blue, and purple, and is designated by a number from 0 to 10 followed by a letter abbreviation (R = red, YR = yellow-red, Y = yellow). Within each letter range, the hue becomes more yellow and less red as the number increases. The range of hues for gleyed soils includes yellow (5Y), green-yellow (5GY), green (5G), blue-green (5BG) and blue (5B). *Value* indicates a color's lightness and is designated by a number from 0 (absolute black) to 10 (absolute white). *Chroma* indicates a color's strength or departure from a neutral of the same lightness. Within the Munsell Soil Color Chart chroma ranges from 0 for neutral to 8. Soil color is typically determined using a moist soil sample. Neutral colored soils with no hue and a chroma of zero are designated with the letter N on the gley page.

Mottling, the presence of brightly contrasting spots of color within the soil matrix, is often indicative of a fluctuating water table. Mottles are also color graded using the Munsell system. A soil's texture (e.g., sand, loamy sand, sandy loam, loam, silt loam, clay loam, clay) and structure (e.g. platy, prismatic, blocky, granular, etc.) are features which influence its porosity and permeability. These in turn determine the frequency and duration of saturation and inundation for a soil.

The USACE manual stipulates that unmottled mineral soils with a matrix chroma of 1 or less, and mottled mineral soils with a matrix chroma of 2 or less immediately below the A-horizon or at a depth of 10 inches (whichever is shallower) are indicative of hydric conditions. Gleyed (gray) soils resulting from the reduction of iron under waterlogged conditions are also an indicator of hydric soils when observed within the upper 10 inches. Other hydric soil indicators include the detection of hydrogen sulfide from permanently saturated soils, the presence of iron and manganese

concretions, and a positive  $\alpha$ - $\alpha$ -dipyridil test for reducing conditions. Organic peat or muck soils (Histosols) are exclusively hydric.

#### Wetland Hydrology

The USACE defines wetland hydrology as the sum total of wetness characteristic in areas that are inundated or have saturated soils for a sufficient duration to support hydrophytic vegetation. The climate (temperature, precipitation, evaporation), local geology (parent material and soil properties), topography, surface drainage patterns, water table, and vegetative cover (evapotranspiration) are all factors which influence the hydrology and potential wetness of an area. Because inundation or soil surface saturation may only occur seasonally, indirect indicators of past hydrologic conditions must be sought to satisfy the criteria. Primary indicators of wetland hydrology include drainage patterns, drift lines, sediment deposition, watermarks on trees or other features, visual observation of saturated soils, and inundation. In addition to on-site evidence, recorded information such as stream gauge data, flood maps, historical records or previous hydraulic reports may also be of assistance in determining the frequency and duration of inundation. Oxidized root channels in the upper 12 inches, the presence of water stained leaves, local soil survey data, the FAC-neutral vegetation test and morphologic plant adaptations are secondary indicators of wetland hydrology. The 1987 wetland determination methodology requires that one primary indicator or two secondary indicators be identified as evidence of hydrology.

#### **IV. Preliminary Review**

Prior to the on-site investigation, standard sources of information were reviewed to assess the potential for encountering "Waters of the United States" and "Waters of the State," including wetlands, within the proposed project area.

#### USGS Topographic Maps

Section 1 of the I-69 Project area is located in Vanderburgh, Gibson, and Warrick counties, Indiana. The project area is located on the Elberfeld and Francisco Indiana USGS Quadrangle Maps (Attachment #5).

#### Soil Survey Data

The United States Department of Agriculture Soil Survey of Vanderburgh, Gibson, and Warrick counties, Indiana were consulted to identify the mapped soil series that occur in each of the 12 wetland impact areas identified. The following is a list of the soil series that were identified in the wetland impact areas within the Preferred Alternative right-of-way.

##### I-69 Section 1 Preferred Alternative Wetland Impact Sites Soils

Hosmer silt loam  
Iva silt loam  
Stendal silt loam  
Tartown silt loam

#### National Wetland Inventory Maps

Digital USFWS National Wetland Inventory (NWI) maps identified 8 wetlands within the I-69 Section 1 Preferred Alternative. The 8 NWI wetland within the Section 1 Preferred Alternative consisted of the following wetland types:

- 5 – Palustrine Unconsolidated Bottom Wetlands (PUB)
- 2 – Palustrine Forested Wetlands (PFO)



## 1 – Palustrine Scrub/Shrub Wetland (PSS)

### FEMA Flood Maps

Indiana Department of Natural Resources (IDNR) Division of Water Digital Flood Insurance Rate Map (FIRM) for Vanderburgh, Gibson, and Warrick counties were reviewed for this project. The FIRM map identified one floodplain area within the I-69 Section 1 Preferred Alternative right-of-way (Figure 1). The Pigeon Creek floodplain is crossed by the Section 1 Preferred Alternative.

## V. Field Investigation

On-site field reconnaissance were conducted in June and July of 2004. At that time, the entire I-69 Section 1 area was reviewed to identify possible wetland impacts. Twelve (12) wetland areas and 2 ponds were identified during the 2004 field reconnaissance that will be impacted by the Section 1 Preferred Alternative. These wetlands and ponds are located in the Highland-Pigeon and Patoka River 8-digit watersheds.

## VI. Investigation Findings

### Wetlands

A total of 12 wetlands will be impacted by the proposed Preferred Alternative for Section 1 of the I-69 project. These consist of 1 palustrine forested wetland and 11 palustrine emergent wetland areas. The total area of wetland impacts associated with Section 1 of the I-69 project will be 1.18 acres. There are also 4 ponds located within the Preferred Alternative right-of-way for Section 1. The total impact area of these 4 ponds is 0.75 acre. Table 1 below identifies the wetland and pond impacts and acres of each wetland and pond impacted within the right-of-way.

Table 1. Summary of Wetland and Pond Impacts within the I-69 Section 1 Preferred Alternative				
ID #	Wetlands	Impacted Area	Jurisdiction	Classification (Cowardin)
Sec 1-w01	Forested	0.02 acre	Yes	PFO
Sec 1-w05	Emergent	0.01 acre	Yes	PEM
Sec 1-w07	Emergent	0.14 acre	Yes	PEM
Sec 1-w08	Emergent	0.26 acre	Yes	PEM
Sec 1-w10	Emergent	0.07 acre	Yes	PEM
Sec 1-w17	Emergent	0.06 acre	Yes	PEM
Sec 1-w18	Emergent	0.05 acre	Yes	PEM
Sec 1-w19	Emergent	0.16 acre	Yes	PEM
Sec 1-w24	Emergent	0.16 acre	Yes	PEM
Sec 1-w26	Emergent	0.09 acre	Yes	PEM
Sec 1-w28	Emergent	0.07 acre	Yes	PEM
Sec 1-w31	Emergent	0.09 acre	Yes	PEM
	Total Wetland Impacts	1.18 acres		
ID#	Ponds	Impacted Area	Jurisdiction	Classification (Cowardin)
Sec 1-w24	Pond with fringe wetland	0.32 acre	Yes	PUB
Sec 1-w28	Pond with fringe wetland	0.15 acre	Yes	PUB
Sec 1-p05	Pond with no fringe wetland	0.15 acre	Yes	PUB
Sec 1-p07	Pond with no fringe wetland	0.13 acre	Yes	PUB
	Total Pond Impacts	0.75 acre	-	-
	<b>TOTAL IMPACTS</b>	1.93 acres		

## **Wetland Impacts**

The wetlands being impacted have a total area of 1.18 acres and the ponds being impacted have a total area of 0.75 acre. The wetlands and ponds are located throughout the Section 1 Preferred Alternative right-of-way (Attachment #5 and #6). Attachment #7 contains detailed impact site information on each of the wetland and pond impact areas. InWRAP was performed on all of the wetlands being impacted by the Section 1 Preferred Alternative (Attachment #15). Below is a brief description of each of the wetland and pond impact areas.

### Wetland Sec 1-w01

Sec 1-w01 is a forested floodplain wetland, 0.06 acre in size. In terms of animal habitat, the wetland received a fair rating. It scored well because of dead woody material and tree canopy, but scored poorly because of the small size, lack of mature trees, and lack of zonation. Botanically, Sec 1-w01 scored poor because of the low number of hydrophytic dominant plant species and low conservatism rating. Hydrologically, the wetland has good water quality protection, but poor flood and storm water storage potential, giving it an overall hydrology rating of fair. Approximately 0.02 acre of this wetland will be impacted by this project.

### Wetland Sec 1-w05

Sec 1-w05 is a wet meadow, 0.01 acre in size. In terms of animal habitat, the wetland received a poor rating. It scored poorly because it lacked standing water, dead woody material, tree canopy, mature trees, and vegetation zonation, interspersed and stratification. Botanically, Sec 1-w05 received a poor rating because of low numbers of hydrophytic species, low conservatism rating, and no indicator species present. Hydrologically, the wetland has fair water quality protection and flood and storm water storage potential, giving it an overall hydrology rating of fair. Approximately 0.01 acre of this wetland will be impacted by this project.

### Wetland Sec 1-w07

Sec 1-w07 is a seasonally flooded basin, 0.23 acre in size. In terms of animal habitat, the wetland received a poor rating. It lacked tree canopy, dead woody material, and standing water. Botanically, Sec 1-w07 received a poor rating because of low numbers of hydrophytic species, low conservatism rating, and no indicator species present. Hydrologically, the wetland has good water quality protection and decent flood and storm water storage potential, giving it an overall hydrology rating of fair. Approximately 0.14 acre of this wetland will be impacted by this project.

### Wetland Sec 1-w08

Sec 1-w08 is a seasonally flooded basin, 0.33 acre in size. In terms of animal habitat, the wetland received a poor rating. It lacked tree canopy, dead woody material, and standing water. Botanically, Sec 1-w08 received a poor rating because of low numbers of hydrophytic species, low conservatism rating, and no indicator species present. Hydrologically, the wetland has good water quality protection and poor flood and storm water storage potential, giving it an overall hydrology rating of fair. Approximately 0.26 acre of this wetland will be impacted by this project.

### Wetland Sec 1-w10

Sec 1-w10 is a seasonally flooded basin, 0.07 acre in size. In terms of animal habitat, the wetland received a poor rating. It scored well because of its size and connectivity to other wetlands, but poorly because it lacked standing water, dead woody material, and tree canopy. Botanically, Sec 1-w10 received a poor rating because of low numbers of hydrophytic species, low conservatism



rating, and no indicator species present. Hydroloically, the wetland has decent water quality protection and flood and storm water storage potential, giving it an overall hydrology rating of fair. Approximately 0.07 acre of this wetland will be impacted by this project.

#### Wetland Sec 1-w17

Sec 1-w17 is a wet meadow wetland, 0.11 acre in size. In terms of animal habitat, the wetland received a poor rating due to its lack of standing water, dead woody material, tree canopy, and zonation. Botanically, Sec 1-w17 received a poor rating because of low numbers of hydrophytic species, low conservatism rating, and no indicator species present. Hydroloically, the wetland has decent water quality protection and decent flood and storm water storage potential, giving it an overall hydrology rating of fair. Approximately 0.06 acre of this wetland will be impacted by this project.

#### Wetland Sec1-w18

Sec 1-w18 is a wet meadow wetland, 0.12 acre in size. In terms of animal habitat, the wetland received a poor rating due to surrounding land use and its lack of standing water, tree canopy, dead woody material, and zonation. Botanically, Sec 1-w18 received a poor rating because it contained only one indicator species, low number of hydrophytic species, and no conservatism rating. Hydroloically, the wetland has poor water quality protection and low flood and storm water storage potential, giving it an overall hydrology rating of poor. Approximately 0.05 acre of this wetland will be impacted by this project.

#### Wetland Sec 1-w19

Sec 1-w19 is a seasonally flooded basin, 0.19 acre in size. In terms of animal habitat, the wetland received a poor rating. Although it scored well for zonation and interspersions of plant zones, dominance of agriculture as an adjacent land use, lack of dead woody material, lack of standing water, and lack of tree canopy, led to an overall low animal habitat score. Botanically, Sec 1-w19 received a poor rating because of low numbers of hydrophytic species, low conservatism rating, and no indicator species present. One exotic species was observed and its occurrence was frequent. Only four total species were observed in the wetland, and the species identified have an extremely low average coefficient of conservatism. Hydroloically, the wetland has medium water quality protection and decent flood and storm water storage potential, giving it an overall hydrology rating of fair. Approximately 0.16 acre of this wetland will be impacted by this project.

#### Wetland Sec 1-w24

Sec 1-w24 is an open water area with a seasonally flooded basin fringe, the seasonally flood basin fringe is 0.19 acre in size and the open water portion is 0.39 acre in size. In terms of animal habitat, the wetland received a fair rating. It scored well because of surrounding land use and the wetland's size and connectivity, but scored poorly because of its lack of dead woody material and tree canopy. Botanically, Sec 1-w24 received a poor rating because it had a low diversity of native wetland plants, and overall, only two hydrophytic species were observed. Hydroloically, the wetland has good water quality protection and flood and storm water storage potential, giving it an overall hydrology rating of fair. Approximately 0.16 acre of the seasonally flooded basin wetland will be impacted by this project and approximately 0.32 acre of the open water portion will be impacted.

#### Wetland Sec 1-w26

Sec 1-w26 is a wet meadow, 0.09 acre in size. In terms of animal habitat, the wetland received a fair rating. It scored well because of surrounding land use and the wetland's size and connectivity, but scored poorly because of its lack of dead woody material and tree canopy. Botanically, Sec 1-w26 received a poor rating because of low numbers of hydrophytic species, low conservatism rating, and no indicator species present. Hydroloically, the wetland has good water quality

protection and poor flood and storm water storage potential, giving it an overall hydrology rating of fair. Approximately 0.09 acre of this wetland will be impacted by this project.

#### Wetland Sec 1-w28

Sec 1-w28 is an open water area with a shallow marsh fringe, the shallow marsh fringe is 0.07 acre in size and the open water portion is 0.15 acre in size. In terms of animal habitat, the wetland received a fair rating. It scored well because of surrounding land use and the wetland's size and connectivity, but scored poorly because of its lack of dead woody material and tree canopy. Botanically, Sec 1-w28 received a poor rating because it had a low diversity of native wetland plants. Hydrologically, the wetland has good water quality protection and poor flood and storm water storage potential, giving it an overall hydrology rating of fair. Approximately 0.07 acre of the seasonally flooded basin wetland will be impacted by this project and approximately 0.15 acre of the open water portion will be impacted.

#### Wetland Sec 1-w31

Sec 1-w31 is comprised mostly of an excavated pond with a shallow marsh fringe, the shallow marsh fringe is 1.9 acres in size and the open water portion is 3.9 acres in size. In terms of animal habitat, the wetland received a fair rating. It scored well because of surrounding land use and wetland size, but scored poorly because of its lack of dead woody material and tree canopy. Botanically, Sec 1-w31 received a poor rating because it contained invasive species and had a relatively low diversity of native wetland plants. Hydrologically, the wetland has decent water quality protection and flood and storm water storage potential, giving it an overall hydrology rating of fair. Approximately 0.09 acre of the shallow marsh fringe of this wetland will be impacted by the project. The project will have no impacts on the open water portion of this wetland.

#### Ponds Sec 1-p05 and Sec 1-p07

Both Sec 1-p05 and Sec 1-p07 were artificially created for the purpose of aesthetics, wildlife habitat or stormwater treatment. Sec 1-p05 is approximately 0.97 acre in size and the Section 1 Preferred Alternative will impact approximately 0.15 acre of this pond. Sec 1-p07 is approximately 0.13 acre in size and the Section 1 Preferred Alternative will impact approximately 0.13 acre of this pond.

Additional information on the wetlands being impacted by the I-69 Section 1 Preferred Alternative may be found in Appendix A and Attachments #7 and #15.

### **VII. Regulatory Involvement**

A Waters of the U.S. Jurisdictional Determination Report was submitted to the USACE on June 25, 2007. A letter dated August 17, 2007 from the US Army Corps of Engineers – Louisville District Office (USACE) states that the USACE has jurisdiction over all wetlands and streams identified within the I-69 Section 1 Preferred Alternative right-of-way. Therefore, there are no isolated wetland impacts within the Preferred Alternative right-of-way.

The Corps of Engineers exercises regulatory authority over activities involving the discharge of fill or dredged material into "Waters of the United States" and is responsible for enforcing compliance with the Environmental Protection Agency 404(b)(1) guidelines as a prerequisite to issuance of a Section 404 permit. Any and all parties proposing construction activities involving deposition of fill or dredged material, disruption or destruction through land clearing, and/or alteration of hydrology are required by law to submit for and obtain a permit through the Corps of Engineers before such activities can proceed. In general, Section 404 permits issued by the Louisville District Corps of



Engineers office fall into three categories for Indiana: Individual permits, nationwide permits, and the regional general permit.

Regulatory authority for Section 401 of the Clean Water Act is the responsibility of the Indiana Department of Environmental Management (IDEM). IDEM is charged with maintaining the chemical, physical and biological integrity of Indiana waters through its Water Quality Certification (WQC) program. Section 401, in concert with the Corps Section 404 program, insures that project activities impacting "Waters of the United States" and/or "Waters of the State", including wetlands, are conducted in compliance with the states water quality policies.

Section 404 individual permits (IP) are required for projects where the scope of work would result in significant and/or unique environmental impacts to "Waters of the United States" not covered in any of the pre-authorized nationwide permits. Briefly, the individual permit process involves: (1) submitting the appropriate application, (2) issuance of a public notice, (3) a 15 to 30 day comment period, (4) a review by federal, state and local agencies, as well as, special interest groups and the public, (5) a review of comments received, (6) possible request for additional information (7) a possible public hearing, and (8) the decision to issue or deny the permit. This process can take up to six or more months.

Section 404 nationwide permits have been established to streamline the permitting process by pre-authorizing a variety of common activity which by there very nature result in only minor impacts to "Waters of the United States". Nationwide permits are advantageous because unlike the individual permit they forgo the need to issue a public notice, do not require a 15 to 30 day comment period, and are not subject to a public hearing. Projects meeting the qualifications for a specific nationwide permit must however still comply with the general and Section 404 specific conditions required, including notification of the District Engineer when applicable. Issuance of several of the nationwide permits also requires Section 401 Water Quality Certification (WQC) through the IDEM.

The Section 404 regional general permit (RGP) for Indiana was issued on February 11, 2000. It authorizes activities related to construction of new facilities or structures, which have minimal individual and cumulative impacts. This permit is applicable to activities involving (1) discharges of dredged or fill material into 1 acre or less of "Waters of the United States," including wetlands, (2) dredging in navigable waters up to 10,000 cubic yards, (3) structures and fills for docking and mooring similar to permitted structures and fills in the vicinity, and (4) discharges of dredged or fill material into Lake Michigan up to 0.10 acre except for bank stabilization. Under this regional general permit, discharges impacting less than 0.10 acre do not require USACE notification, but still necessitate that an application be submitted to the IDEM for WQC and the IDNR Division of Water for a Construction in a Floodway Permit, if applicable. Typical response time for the IDEM public notice period (21 days) and review process is 120 days from date of application. Upon receiving the IDEM's Section 401 approval, the Corps begins its formal review of the project. Response from the Corps is typically within 45 days.

## **VIII. Summary**

The June and July of 2004, a wetland investigation for the proposed I-69 Section 1 project in Vanderburgh, Gibson, and Warrick counties, Indiana resulted in the identification of 12 wetland areas and 2 ponds that will be impacted by the Preferred Alternative. Approximately 0.02 acre of forested wetland, 1.16 acre of emergent wetlands, and 0.75 acre of ponds will be impacted by the I-69 Section 1 Preferred Alternative. Normal circumstances were considered to exist at the wetland impact sites and no atypical situations or potential problems were identified on-site. Coordination

with the Army Corps of Engineers, the Indiana Department of Environmental Management on this project is ongoing. Mitigation for impacts to the 0.02 acre of forested wetland will be complete at a 3:1 mitigation ratio and mitigation for the 1.16 acres of emergent wetlands will be completed at a 2:1 ratio. The ponds will be mitigated at a 1:1 ratio. A wetland mitigation site of approximately 5 acres is being developed to compensate for the impacts of the I-69 Section 1 Preferred Alternative.



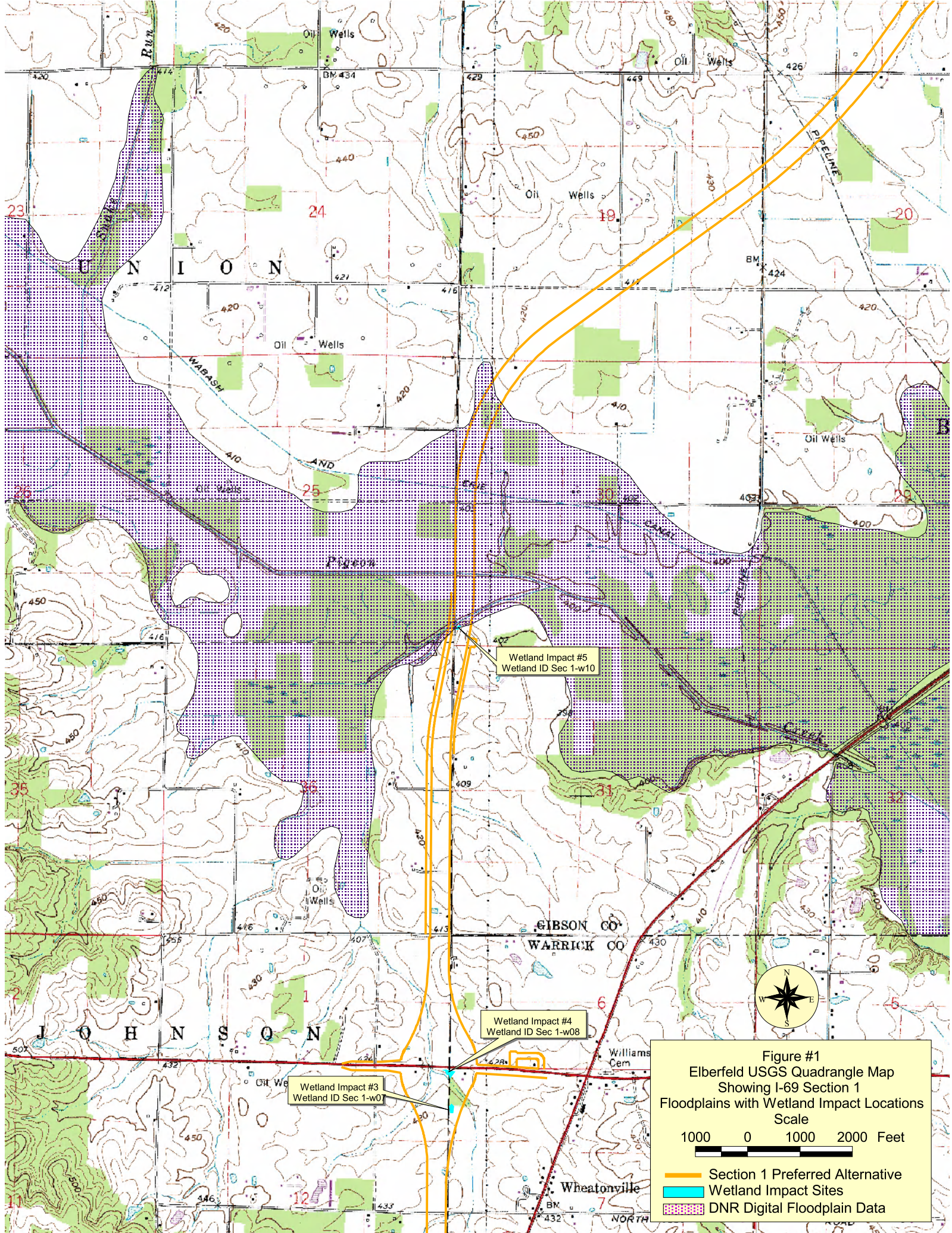


Figure #1  
Elberfeld USGS Quadrangle Map  
Showing I-69 Section 1  
Floodplains with Wetland Impact Locations  
Scale

1000 0 1000 2000 Feet

Section 1 Preferred Alternative  
Wetland Impact Sites  
DNR Digital Floodplain Data

# **Appendix A**

## **Routine Wetland Delineation Forms**



# DATA SHEET: WETLAND DELINEATION

Feature ID: Sec1-W01 (W01001)  
Project/Site: I-69  
Client: QK4  
Investigator(s): MWW, CND  
Aerial Sheet No.: 1

Segment: 1  
Date: 6/18/2004  
County: Vanderburgh  
State: IN  
Approx MP:

WETLAND			UPLAND		
Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
USACE Jurisdictional?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	USACE Jurisdictional?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

VEGETATION			VEGETATION		
DOMINANT SPECIES	STRATUM	INDICATOR	DOMINANT SPECIES	STRATUM	INDICATOR
<i>Acer saccharinum</i>	Tree	FACW	<i>Fraxinus americana</i>	Tree	FACU
<i>Ulmus americana</i>	Tree	FACW-	<i>Parthenocissus quinquefolia</i>	Vine	FAC-
<i>Leersia virginica</i>	Herb	OBL	<i>Lonicera japonica</i>	Vine	FACU
<i>Impatiens capensis</i>	Herb	FACW			
<i>Toxicodendron radicans</i>	Vine	FAC+			
<i>Polygonum hydropiper</i>	Herb	OBL			
Percent of Species OBL, FACW, FAC (excl. FAC-)	100%		Percent of Species OBL, FACW, FAC (excl. FAC-)	0%	

Remarks: Meets the hydrophytic vegetation criterion.

Remarks: Does not meet the hydrophytic vegetation criterion.

HYDROLOGY			HYDROLOGY		
Field Indicators:	Depth of Surface Water:	<u>None</u>	Field Indicators:	Depth of Surface Water:	<u>None</u>
	Depth to Free Water:	<u>&gt;16"</u>		Depth to Free Water:	<u>&gt;16"</u>
	Depth to Saturated Soil:	<u>&gt;16"</u>		Depth to Saturated Soil:	<u>&gt;16"</u>
PRIMARY INDICATORS	SECONDARY INDICATORS		PRIMARY INDICATORS	SECONDARY INDICATORS	
Inundated	<input type="checkbox"/>	Ox. root channels	<input type="checkbox"/>	<input type="checkbox"/>	
Saturated <12"	<input type="checkbox"/>	Water-stained leaves	<input type="checkbox"/>	<input type="checkbox"/>	
Water marks	<input type="checkbox"/>	Local soil survey data	<input type="checkbox"/>	<input type="checkbox"/>	
Sediment deposit	<input type="checkbox"/>	FAC- Neutral test	<input type="checkbox"/>	<input type="checkbox"/>	
Drainage patterns	<input checked="" type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>	<input type="checkbox"/>	
		Drift lines present			
Remarks:	Meets the hydrology criterion.		Remarks:	Does not meet the hydrology criterion.	

SOILS				SOILS			
Map Unit Name:	Hosmer silt loam, 2 to 6 % slopes			Map Unit Name:	Hosmer silt loam, 2 to 6 % slopes		
Profile Description:	DEPTH	MATRIX	MOTTLE	Profile Description:	DEPTH	MATRIX	MOTTLE
	0-18"	10YR 5/2	10YR5/6		0-12"	10YR 5/3	10YR5/4
			loam				loam
HYDRIC SOIL INDICATORS				HYDRIC SOIL INDICATORS			
Histosol	<input type="checkbox"/>	Concretions	<input type="checkbox"/>	Histosol	<input type="checkbox"/>	Concretions	<input type="checkbox"/>
Histic epipedon	<input type="checkbox"/>	Organic content	<input type="checkbox"/>	Histic epipedon	<input type="checkbox"/>	Organic content	<input type="checkbox"/>
Sulfidic odor	<input type="checkbox"/>	Organic streaking	<input type="checkbox"/>	Sulfidic odor	<input type="checkbox"/>	Organic streaking	<input type="checkbox"/>
Aquic moisture reg.	<input type="checkbox"/>	Local hydric soils list	<input type="checkbox"/>	Aquic moisture reg.	<input type="checkbox"/>	Local hydric soils list	<input type="checkbox"/>
Gleyed	<input type="checkbox"/>	National hydric soils list	<input type="checkbox"/>	Gleyed	<input type="checkbox"/>	National hydric soils list	<input type="checkbox"/>
Low Chroma	<input checked="" type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>	Low Chroma	<input type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>
Remarks:	Meets the hydric soil criterion.			Remarks:	Does not meet the hydric soil criterion.		

WETLAND DETERMINATION			WETLAND DETERMINATION		
Hydrophytic vegetation present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydrophytic vegetation present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Wetland hydrology present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Wetland hydrology present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Hydric soils present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydric soils present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Sampling point within a wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Sampling point within a wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

SKETCH:

# DATA SHEET: WETLAND DELINEATION

Feature ID: Sec1-W05 (W03002)  
Project/Site: I-69  
Client: QK4  
Investigator(s): SMT, CND  
Aerial Sheet No.: 2

Segment: 1  
Date: 6/22/2004  
County: Vanderburgh  
State: IN  
Approx MP:

WETLAND			UPLAND		
Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
USACE Jurisdictional?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	USACE Jurisdictional?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

VEGETATION			VEGETATION		
DOMINANT SPECIES	STRATUM	INDICATOR	DOMINANT SPECIES	STRATUM	INDICATOR
<i>Juncus tenuis</i>	Herb	FAC	<i>Ambrosia artemisiifolia</i>	Herb	FACU
<i>Lindernia dubia</i>	Herb	OBL	<i>Acer rubrum</i>	Tree	FAC
<i>Ambrosia artemisiifolia</i>	Herb	FACU	<i>Ambrosia trifida</i>	Herb	FAC+
<i>Polygonum pensylvanicum</i>	Herb	FACW+	<i>Lonicera japonica</i>	Vine	FACU
<i>Eleocharis obtusa</i>	Herb	OBL	<i>Carya ovata</i>	Tree	FACU

Percent of Species OBL, FACW, FAC (excl. FAC-) 80% Percent of Species OBL, FACW, FAC (excl. FAC-) 40%

Remarks: Meets the hydrophytic vegetation criterion. Remarks: Does not meet the hydrophytic vegetation criterion.

HYDROLOGY			HYDROLOGY		
Field Indicators:	Depth of Surface Water:	<u>None</u>	Field Indicators:	Depth of Surface Water:	<u>None</u>
	Depth to Free Water:	<u>&gt;16"</u>		Depth to Free Water:	<u>&gt;16"</u>
	Depth to Saturated Soil:	<u>&gt;16"</u>		Depth to Saturated Soil:	<u>&gt;16"</u>
PRIMARY INDICATORS	SECONDARY INDICATORS		PRIMARY INDICATORS	SECONDARY INDICATORS	
Inundated	<input type="checkbox"/>	Ox. root channels	<input type="checkbox"/>	Ox. root channels	<input type="checkbox"/>
Saturated <12"	<input type="checkbox"/>	Water-stained leaves	<input type="checkbox"/>	Water-stained leaves	<input type="checkbox"/>
Water marks	<input type="checkbox"/>	Local soil survey data	<input type="checkbox"/>	Local soil survey data	<input type="checkbox"/>
Sediment deposit	<input type="checkbox"/>	FAC- Neutral test	<input checked="" type="checkbox"/>	FAC- Neutral test	<input type="checkbox"/>
Drainage patterns	<input checked="" type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>

Remarks: Meets the hydrology criterion. Remarks: Does not meet the hydrology criterion.

SOILS				SOILS			
Map Unit Name:	<u>Iva silt loam, 0 to 2 percent slopes</u>			Map Unit Name:	<u>Iva silt loam, 0 to 2 percent slopes</u>		
Profile Description:				Profile Description:			
DEPTH	MATRIX	MOTTLE	TEXTURE	DEPTH	MATRIX	MOTTLE	TEXTURE
<u>0-16"</u>	<u>2.5Y 5/2</u>	<u>7.5YR 4/6 and 10YR 5/8</u>	<u>sil</u>	<u>0-16"</u>	<u>10YR 5/4</u>		<u>sil</u>
HYDRIC SOIL INDICATORS				HYDRIC SOIL INDICATORS			
Histosol	<input type="checkbox"/>	Concretions	<input type="checkbox"/>	Histosol	<input type="checkbox"/>	Concretions	<input type="checkbox"/>
Histic epipedon	<input type="checkbox"/>	Organic content	<input type="checkbox"/>	Histic epipedon	<input type="checkbox"/>	Organic content	<input type="checkbox"/>
Sulfidic odor	<input type="checkbox"/>	Organic streaking	<input type="checkbox"/>	Sulfidic odor	<input type="checkbox"/>	Organic streaking	<input type="checkbox"/>
Aquic moisture reg.	<input type="checkbox"/>	Local hydric soils list	<input type="checkbox"/>	Aquic moisture reg.	<input type="checkbox"/>	Local hydric soils list	<input type="checkbox"/>
Gleyed	<input type="checkbox"/>	National hydric soils list	<input type="checkbox"/>	Gleyed	<input type="checkbox"/>	National hydric soils list	<input type="checkbox"/>
Low Chroma	<input checked="" type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>	Low Chroma	<input type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>

Remarks: Meets the hydric soil criterion. Remarks: Does not meet the hydric soil criterion.

WETLAND DETERMINATION			WETLAND DETERMINATION		
Hydrophytic vegetation present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydrophytic vegetation present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Wetland hydrology present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Wetland hydrology present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Hydric soils present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydric soils present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Sampling point within a wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Sampling point within a wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

SKETCH:



# DATA SHEET: WETLAND DELINEATION

Feature ID: Sec1-W07 (W03005)  
Project/Site: I-69  
Client: QK4  
Investigator(s): SMT, CND  
Aerial Sheet No.: 3

Segment: 1  
Date: 6/22/2004  
County: Vanderburgh  
State: IN  
Approx MP:

WETLAND			UPLAND		
Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Significantly Disturbed?	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Significantly Disturbed?	<input checked="" type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
USACE Jurisdictional?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	USACE Jurisdictional?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

VEGETATION			VEGETATION		
DOMINANT SPECIES	STRATUM	INDICATOR	DOMINANT SPECIES	STRATUM	INDICATOR
<i>Echinochloa crusgalli</i>	Herb	FACW	<i>Zea mays</i>	Herb	UPL
<i>Gratiola neglecta</i>	Herb	OBL			
<i>Lindernia dubia</i>	Herb	OBL			
Percent of Species OBL, FACW, FAC (excl. FAC-)	100%		Percent of Species OBL, FACW, FAC (excl. FAC-)	0%	

Remarks: Meets the hydrophytic vegetation criterion.

Remarks: Does not meet the hydrophytic vegetation criterion.

HYDROLOGY			HYDROLOGY		
Field Indicators:	Depth of Surface Water:	<u>None</u>	Field Indicators:	Depth of Surface Water:	<u>None</u>
	Depth to Free Water:	<u>&gt;16"</u>		Depth to Free Water:	<u>&gt;16"</u>
	Depth to Saturated Soil:	<u>0"</u>		Depth to Saturated Soil:	<u>&gt;16"</u>
PRIMARY INDICATORS	SECONDARY INDICATORS		PRIMARY INDICATORS	SECONDARY INDICATORS	
Inundated	<input checked="" type="checkbox"/>	Ox. root channels	Inundated	<input type="checkbox"/>	Ox. root channels
Saturated <12"	<input checked="" type="checkbox"/>	Water-stained leaves	Saturated <12"	<input type="checkbox"/>	Water-stained leaves
Water marks	<input type="checkbox"/>	Local soil survey data	Water marks	<input type="checkbox"/>	Local soil survey data
Sediment deposit	<input type="checkbox"/>	FAC- Neutral test	Sediment deposit	<input type="checkbox"/>	FAC- Neutral test
Drainage patterns	<input type="checkbox"/>	Other (ex. in Remarks)	Drainage patterns	<input type="checkbox"/>	Other (ex. in Remarks)

Remarks: Meets the hydrology criterion.

Remarks: Does not meet the hydrology criterion.

SOILS				SOILS			
Map Unit Name:	Stendal silt loam, frequently flooded			Map Unit Name:	Stendal silt loam, frequently flooded		
Profile Description:	DEPTH	MATRIX	MOTTLE	Profile Description:	DEPTH	MATRIX	MOTTLE
	0-8"	10YR 5/4			0-16"	10YR 5/4	
	8-16"	10YR 3/2	10YR 5/4				
			sil				sil
			sicl				
HYDRIC SOIL INDICATORS				HYDRIC SOIL INDICATORS			
Histosol	<input type="checkbox"/>	Concretions	<input type="checkbox"/>	Histosol	<input type="checkbox"/>	Concretions	<input type="checkbox"/>
Histic epipedon	<input type="checkbox"/>	Organic content	<input type="checkbox"/>	Histic epipedon	<input type="checkbox"/>	Organic content	<input type="checkbox"/>
Sulfidic odor	<input type="checkbox"/>	Organic streaking	<input type="checkbox"/>	Sulfidic odor	<input type="checkbox"/>	Organic streaking	<input type="checkbox"/>
Aquic moisture reg.	<input type="checkbox"/>	Local hydric soils list	<input type="checkbox"/>	Aquic moisture reg.	<input type="checkbox"/>	Local hydric soils list	<input type="checkbox"/>
Gleyed	<input type="checkbox"/>	National hydric soils list	<input type="checkbox"/>	Gleyed	<input type="checkbox"/>	National hydric soils list	<input type="checkbox"/>
Low Chroma	<input checked="" type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>	Low Chroma	<input type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>

Remarks: Meets the hydric soil criterion.

Remarks: Does not meet the hydric soil criterion.

WETLAND DETERMINATION			WETLAND DETERMINATION		
Hydrophytic vegetation present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydrophytic vegetation present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Wetland hydrology present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Wetland hydrology present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Hydric soils present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydric soils present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Sampling point within a wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Sampling point within a wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

SKETCH:

# DATA SHEET: WETLAND DELINEATION

Feature ID: Sec1-W08 (W03004)  
Project/Site: I-69  
Client: QK4  
Investigator(s): SMT, CND  
Aerial Sheet No.: 3

Segment: 1  
Date: 6/22/2004  
County: Vanderburgh  
State: IN  
Approx MP:

WETLAND			UPLAND		
Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
USACE Jurisdictional?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	USACE Jurisdictional?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
possibly adjacent					

VEGETATION			VEGETATION		
DOMINANT SPECIES	STRATUM	INDICATOR	DOMINANT SPECIES	STRATUM	INDICATOR
<i>Eleocharis obtusa</i>	Herb	OBL	<i>Festuca pratensis</i>	Herb	FACU-
<i>Echinochloa crusgalli</i>	Herb	FACW	<i>Juncus tenuis</i>	Herb	FAC
<i>Polygonum lapathifolium</i>	Herb	FACW+	<i>Poa pratensis</i>	Herb	FAC-
<i>Ludwigia palustris</i>	Herb	OBL			
Percent of Species OBL, FACW, FAC (excl. FAC-)	100%		Percent of Species OBL, FACW, FAC (excl. FAC-)	33%	

Remarks: Meets the hydrophytic vegetation criterion.

Remarks: Does not meet the hydrophytic vegetation criterion.

HYDROLOGY			HYDROLOGY		
Field Indicators:	Depth of Surface Water:	<u>None</u>	Field Indicators:	Depth of Surface Water:	<u>None</u>
	Depth to Free Water:	<u>&gt;16"</u>		Depth to Free Water:	<u>&gt;16"</u>
	Depth to Saturated Soil:	<u>&gt;16"</u>		Depth to Saturated Soil:	<u>&gt;16"</u>
PRIMARY INDICATORS	SECONDARY INDICATORS		PRIMARY INDICATORS	SECONDARY INDICATORS	
Inundated	<input type="checkbox"/>	Ox. root channels	<input type="checkbox"/>	<input type="checkbox"/>	
Saturated <12"	<input type="checkbox"/>	Water-stained leaves	<input type="checkbox"/>	<input type="checkbox"/>	
Water marks	<input type="checkbox"/>	Local soil survey data	<input type="checkbox"/>	<input type="checkbox"/>	
Sediment deposit	<input checked="" type="checkbox"/>	FAC- Neutral test	<input type="checkbox"/>	<input type="checkbox"/>	
Drainage patterns	<input type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>	<input type="checkbox"/>	
		Algal mats			

Remarks: Meets the hydrology criterion.

Remarks: Does not meet the hydrology criterion.

SOILS				SOILS			
Map Unit Name:	Stendal silt loam, frequently flooded			Map Unit Name:	Stendal silt loam, frequently flooded		
Profile Description:	DEPTH	MATRIX	MOTTLE	Profile Description:	DEPTH	MATRIX	MOTTLE
	0-16"	10YR 5/2	7.5YR 4/6		0-16"	10YR 5/3	
			sil				sil
HYDRIC SOIL INDICATORS				HYDRIC SOIL INDICATORS			
Histosol	<input type="checkbox"/>	Concretions	<input type="checkbox"/>	Histosol	<input type="checkbox"/>	Concretions	<input type="checkbox"/>
Histic epipedon	<input type="checkbox"/>	Organic content	<input type="checkbox"/>	Histic epipedon	<input type="checkbox"/>	Organic content	<input type="checkbox"/>
Sulfidic odor	<input type="checkbox"/>	Organic streaking	<input type="checkbox"/>	Sulfidic odor	<input type="checkbox"/>	Organic streaking	<input type="checkbox"/>
Aquic moisture reg.	<input type="checkbox"/>	Local hydric soils list	<input type="checkbox"/>	Aquic moisture reg.	<input type="checkbox"/>	Local hydric soils list	<input type="checkbox"/>
Gleyed	<input type="checkbox"/>	National hydric soils list	<input type="checkbox"/>	Gleyed	<input type="checkbox"/>	National hydric soils list	<input type="checkbox"/>
Low Chroma	<input checked="" type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>	Low Chroma	<input type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>

Remarks: Meets the hydric soil criterion.

Remarks: Does not meet the hydric soil criterion.

WETLAND DETERMINATION			WETLAND DETERMINATION		
Hydrophytic vegetation present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydrophytic vegetation present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Wetland hydrology present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Wetland hydrology present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Hydric soils present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydric soils present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Sampling point within a wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Sampling point within a wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

SKETCH:



# DATA SHEET: WETLAND DELINEATION

Feature ID: Sec1-W10 (W03008)  
Project/Site: I-69  
Client: QK4  
Investigator(s): SMT, CND  
Aerial Sheet No.: 6

Segment: 1  
Date: 6/23/2004  
County: Vanderburgh  
State: IN  
Approx MP:

WETLAND			UPLAND		
Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
USACE Jurisdictional?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	USACE Jurisdictional?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
	adjacent				

VEGETATION			VEGETATION		
DOMINANT SPECIES	STRATUM	INDICATOR	DOMINANT SPECIES	STRATUM	INDICATOR
<i>Scirpus atrovirens</i>	Herb	OBL	<i>Festuca pratensis</i>	Herb	FACU-
<i>Phalaris arundinacea</i>	Herb	FACW+	<i>Trifolium repens</i>	Herb	FACU+
<i>Rumex crispus</i>	Herb	FAC+	<i>Plantago major</i>	Herb	FAC+
<i>Carex vulpinoidea</i>	Herb	OBL			

Percent of Species OBL, FACW, FAC (excl. FAC-) 100% Percent of Species OBL, FACW, FAC (excl. FAC-) 33%

Remarks: Meets the hydrophytic vegetation criterion. Remarks: Does not meet the hydrophytic vegetation criterion.

HYDROLOGY			HYDROLOGY		
Field Indicators:	Depth of Surface Water:	<u>None</u>	Field Indicators:	Depth of Surface Water:	<u>None</u>
	Depth to Free Water:	<u>&gt;16"</u>		Depth to Free Water:	<u>&gt;16"</u>
	Depth to Saturated Soil:	<u>0"</u>		Depth to Saturated Soil:	<u>&gt;16"</u>
PRIMARY INDICATORS	SECONDARY INDICATORS		PRIMARY INDICATORS	SECONDARY INDICATORS	
Inundated	<input checked="" type="checkbox"/>	Ox. root channels	Inundated	<input type="checkbox"/>	Ox. root channels
Saturated <12"	<input checked="" type="checkbox"/>	Water-stained leaves	Saturated <12"	<input type="checkbox"/>	Water-stained leaves
Water marks	<input type="checkbox"/>	Local soil survey data	Water marks	<input type="checkbox"/>	Local soil survey data
Sediment deposit	<input type="checkbox"/>	FAC- Neutral test	Sediment deposit	<input type="checkbox"/>	FAC- Neutral test
Drainage patterns	<input type="checkbox"/>	Other (ex. in Remarks)	Drainage patterns	<input type="checkbox"/>	Other (ex. in Remarks)

Remarks: Meets the hydrology criterion. Remarks: Does not meet the hydrology criterion.

SOILS				SOILS			
Map Unit Name:	<u>Taftown silt loam, 12 to 18 percent slopes, severely ero</u>			Map Unit Name:	<u>Taftown silt loam, 12 to 18 percent slopes, severely ero</u>		
Profile Description:	DEPTH	MATRIX	MOTTLE	Profile Description:	DEPTH	MATRIX	MOTTLE
	<u>0-4"</u>	<u>2.5Y 4/2</u>	<u>7.5YR 4/4</u>		<u>0-3"</u>	<u>2.5Y 4/3</u>	<u>7.5YR 4/4</u>
			<u>sicl</u>				<u>sicl</u>
HYDRIC SOIL INDICATORS				HYDRIC SOIL INDICATORS			
Histosol	<input type="checkbox"/>	Concretions	<input type="checkbox"/>	Histosol	<input type="checkbox"/>	Concretions	<input type="checkbox"/>
Histic epipedon	<input type="checkbox"/>	Organic content	<input type="checkbox"/>	Histic epipedon	<input type="checkbox"/>	Organic content	<input type="checkbox"/>
Sulfidic odor	<input type="checkbox"/>	Organic streaking	<input type="checkbox"/>	Sulfidic odor	<input type="checkbox"/>	Organic streaking	<input type="checkbox"/>
Aquic moisture reg.	<input type="checkbox"/>	Local hydric soils list	<input type="checkbox"/>	Aquic moisture reg.	<input type="checkbox"/>	Local hydric soils list	<input type="checkbox"/>
Gleyed	<input type="checkbox"/>	National hydric soils list	<input type="checkbox"/>	Gleyed	<input type="checkbox"/>	National hydric soils list	<input type="checkbox"/>
Low Chroma	<input checked="" type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>	Low Chroma	<input type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>

Remarks: Meets the hydric soil criterion. Couldn't dig below 4"- Remarks: Does not meet the hydric soil criterion. Couldn't dig below 3"- clay

WETLAND DETERMINATION			WETLAND DETERMINATION		
Hydrophytic vegetation present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydrophytic vegetation present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Wetland hydrology present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Wetland hydrology present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Hydric soils present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydric soils present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Sampling point within a wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Sampling point within a wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

SKETCH:

# DATA SHEET: WETLAND DELINEATION

Feature ID: Sec1-W17 (W03013)  
Project/Site: I-69  
Client: QK4  
Investigator(s): SMT, AB  
Aerial Sheet No.: 16

Segment: 1  
Date: 7/14/2004  
County: Vanderburgh  
State: IN  
Approx MP:

WETLAND			UPLAND		
Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
USACE Jurisdictional?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	USACE Jurisdictional?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

VEGETATION			VEGETATION		
DOMINANT SPECIES	STRATUM	INDICATOR	DOMINANT SPECIES	STRATUM	INDICATOR
<i>Echinochloa crusgalli</i>	Herb	FACW	<i>Zea mays</i>	Herb	UPL
<i>Polygonum lapathifolium</i>	Herb	FACW+			
<i>Polygonum persicaria</i>	Herb	FACW			
<i>Ambrosia artemisiifolia</i>	Herb	FACU			
<i>Eleocharis obtusa</i>	Herb	OBL			
Percent of Species OBL, FACW, FAC (excl. FAC-)	80%		Percent of Species OBL, FACW, FAC (excl. FAC-)	0%	

Remarks: Meets the hydrophytic vegetation criterion.

Remarks: Does not meet the hydrophytic vegetation criterion.

HYDROLOGY			HYDROLOGY		
Field Indicators:	Depth of Surface Water:	2"	Field Indicators:	Depth of Surface Water:	None
	Depth to Free Water:	Surface		Depth to Free Water:	>16"
	Depth to Saturated Soil:	Surface		Depth to Saturated Soil:	Surface
PRIMARY INDICATORS	SECONDARY INDICATORS		PRIMARY INDICATORS	SECONDARY INDICATORS	
Inundated	<input checked="" type="checkbox"/> X	Ox. root channels	<input checked="" type="checkbox"/> X	Inundated	Ox. root channels
Saturated <12"	<input checked="" type="checkbox"/> X	Water-stained leaves		Saturated <12"	Water-stained leaves
Water marks		Local soil survey data		Water marks	Local soil survey data
Sediment deposit	<input checked="" type="checkbox"/> X	FAC- Neutral test		Sediment deposit	FAC- Neutral test
Drainage patterns	<input checked="" type="checkbox"/> X	Other (ex. in Remarks)		Drainage patterns	Other (ex. in Remarks)

Remarks: Meets the hydrology criterion.

Remarks: Saturation from previous night rain only, does not meet criterion

SOILS				SOILS			
Map Unit Name:	Steff silt loam, frequently flooded			Map Unit Name:	Steff silt loam, frequently flooded		
Profile Description:	DEPTH	MATRIX	MOTTLE	Profile Description:	DEPTH	MATRIX	MOTTLE
	0-3"	2.5Y 5/4			0-16"	2.5Y 5/4	
	3-16"	2.5Y 6/2	7.5YR 5/8				
			N2.5/				
			concret.				
HYDRIC SOIL INDICATORS				HYDRIC SOIL INDICATORS			
Histosol		Concretions	<input checked="" type="checkbox"/> X	Histosol		Concretions	
Histic epipedon		Organic content		Histic epipedon		Organic content	
Sulfidic odor		Organic streaking		Sulfidic odor		Organic streaking	
Aquic moisture reg.		Local hydric soils list		Aquic moisture reg.		Local hydric soils list	
Gleyed		National hydric soils list		Gleyed		National hydric soils list	
Low Chroma	<input checked="" type="checkbox"/> X	Other (ex. in Remarks)		Low Chroma		Other (ex. in Remarks)	

Remarks: Meets the hydric soil criterion.

Remarks: Does not meet the hydric soil criterion.

WETLAND DETERMINATION			WETLAND DETERMINATION		
Hydrophytic vegetation present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydrophytic vegetation present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Wetland hydrology present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Wetland hydrology present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Hydric soils present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydric soils present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Sampling point within a wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Sampling point within a wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

SKETCH:



# DATA SHEET: WETLAND DELINEATION

Feature ID: Sec1-W18 (W03014)  
Project/Site: I-69  
Client: QK4  
Investigator(s): SMT, AB  
Aerial Sheet No.: 16

Segment: 1  
Date: 7/14/2004  
County: Vanderburgh  
State: IN  
Approx MP:

WETLAND			UPLAND		
Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
USACE Jurisdictional?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	USACE Jurisdictional?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

VEGETATION			VEGETATION		
Dominant Species	Stratum	Indicator	Dominant Species	Stratum	Indicator
<i>Echinochloa crusgalli</i>	Herb	FACW	<i>Zea mays</i>	Herb	UPL
Percent of Species OBL, FACW, FAC (excl. FAC-)		100%	Percent of Species OBL, FACW, FAC (excl. FAC-)		0%
Remarks:	Meets the hydrophytic vegetation criterion.		Remarks:	Does not meet the hydrophytic vegetation criterion.	

HYDROLOGY			HYDROLOGY		
Field Indicators:	Depth of Surface Water:	<u>1"</u>	Field Indicators:	Depth of Surface Water:	<u>None</u>
	Depth to Free Water:	<u>Surface</u>		Depth to Free Water:	<u>&gt;16"</u>
	Depth to Saturated Soil:	<u>Surface</u>		Depth to Saturated Soil:	<u>&gt;16"</u>
PRIMARY INDICATORS	SECONDARY INDICATORS		PRIMARY INDICATORS	SECONDARY INDICATORS	
Inundated	<input checked="" type="checkbox"/>	Ox. root channels	Inundated	<input type="checkbox"/>	Ox. root channels
Saturated <12"	<input checked="" type="checkbox"/>	Water-stained leaves	Saturated <12"	<input type="checkbox"/>	Water-stained leaves
Water marks	<input type="checkbox"/>	Local soil survey data	Water marks	<input type="checkbox"/>	Local soil survey data
Sediment deposit	<input checked="" type="checkbox"/>	FAC- Neutral test	Sediment deposit	<input type="checkbox"/>	FAC- Neutral test
Drainage patterns	<input checked="" type="checkbox"/>	Other (ex. in Remarks)	Drainage patterns	<input type="checkbox"/>	Other (ex. in Remarks)
Remarks:	Meets the hydrology criterion.		Remarks:	Does not meet the hydrology criterion.	

SOILS				SOILS			
Map Unit Name:	<u>Stendal silt loam, frequently flooded</u>			Map Unit Name:	<u>Stendal silt loam, frequently flooded</u>		
Profile Description:	DEPTH	MATRIX	MOTTLE	Profile Description:	DEPTH	MATRIX	MOTTLE
	0-3"	2.5Y 5/4			0-16"	2.5Y 5/4	
	3-16"	2.5Y 6/2	7.5YR 5/8				
			N2.5/				
			concret.				
HYDRIC SOIL INDICATORS				HYDRIC SOIL INDICATORS			
Histosol	<input type="checkbox"/>	Concretions	<input checked="" type="checkbox"/>	Histosol	<input type="checkbox"/>	Concretions	<input type="checkbox"/>
Histic epipedon	<input type="checkbox"/>	Organic content	<input type="checkbox"/>	Histic epipedon	<input type="checkbox"/>	Organic content	<input type="checkbox"/>
Sulfidic odor	<input type="checkbox"/>	Organic streaking	<input type="checkbox"/>	Sulfidic odor	<input type="checkbox"/>	Organic streaking	<input type="checkbox"/>
Aquic moisture reg.	<input type="checkbox"/>	Local hydric soils list	<input type="checkbox"/>	Aquic moisture reg.	<input type="checkbox"/>	Local hydric soils list	<input type="checkbox"/>
Gleyed	<input type="checkbox"/>	National hydric soils list	<input type="checkbox"/>	Gleyed	<input type="checkbox"/>	National hydric soils list	<input type="checkbox"/>
Low Chroma	<input checked="" type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>	Low Chroma	<input type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>
Remarks:	Meets the hydric soil criterion.			Remarks:	Does not meet the hydric soil criterion.		

WETLAND DETERMINATION			WETLAND DETERMINATION		
Hydrophytic vegetation present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydrophytic vegetation present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Wetland hydrology present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Wetland hydrology present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Hydric soils present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydric soils present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Sampling point within a wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Sampling point within a wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

SKETCH:

# DATA SHEET: WETLAND DELINEATION

Feature ID: Sec1-W19 (W03015)  
Project/Site: I-69  
Client: QK4  
Investigator(s): Sarah Tofari, Christi Darcy  
Aerial Sheet No.: 18a

Segment: 1  
Date: 7/20/2004  
County: Gibson  
State: IN  
Approx MP:

WETLAND			UPLAND		
Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
USACE Jurisdictional?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	USACE Jurisdictional?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

VEGETATION			VEGETATION		
DOMINANT SPECIES	STRATUM	INDICATOR	DOMINANT SPECIES	STRATUM	INDICATOR
<i>Echinochloa crusgalli</i>	Herb	FACW	<i>Zea mays</i>	Herb	UPL
<i>Eleocharis obtusa</i>	Herb	OBL			
<i>Polygonum pensylvanicum</i>	Herb	FACW+			
<i>Polygonum lapathifolium</i>	Herb	FACW+			

Percent of Species OBL, FACW, FAC (excl. FAC-) 100% Percent of Species OBL, FACW, FAC (excl. FAC-) 0%

Remarks: Meets the hydrophytic vegetation criterion. Remarks: Does not meet the hydrophytic vegetation criterion.

HYDROLOGY			HYDROLOGY		
Field Indicators:	Depth of Surface Water:	<u>None</u>	Field Indicators:	Depth of Surface Water:	<u>None</u>
	Depth to Free Water:	<u>&gt;16"</u>		Depth to Free Water:	<u>&gt;16"</u>
	Depth to Saturated Soil:	<u>12"</u>		Depth to Saturated Soil:	<u>&gt;16"</u>
PRIMARY INDICATORS	SECONDARY INDICATORS		PRIMARY INDICATORS	SECONDARY INDICATORS	
Inundated	<input type="checkbox"/>	Ox. root channels	<input type="checkbox"/>	<input type="checkbox"/>	
Saturated <12"	<input checked="" type="checkbox"/>	Water-stained leaves	<input type="checkbox"/>	<input type="checkbox"/>	
Water marks	<input type="checkbox"/>	Local soil survey data	<input type="checkbox"/>	<input type="checkbox"/>	
Sediment deposit	<input type="checkbox"/>	FAC- Neutral test	<input type="checkbox"/>	<input type="checkbox"/>	
Drainage patterns	<input type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>	<input type="checkbox"/>	

Remarks: Meets the hydrology criterion. Remarks: Does not meet the hydrology criterion.

SOILS				SOILS			
Map Unit Name:	<u>Hosmer silt loam, 6 to 12 percent slopes</u>			Map Unit Name:	<u>Hosmer silt loam, 6 to 12 percent slopes</u>		
Profile Description:	DEPTH	MATRIX	MOTTLE	Profile Description:	DEPTH	MATRIX	MOTTLE
	0-6"	10YR 4/4			0-16"	10YR 4/4	
	6-16"	2.5Y 5/2	7.5YR 5/8				

HYDRIC SOIL INDICATORS				HYDRIC SOIL INDICATORS			
Histosol	<input type="checkbox"/>	Concretions	<input type="checkbox"/>	Histosol	<input type="checkbox"/>	Concretions	<input type="checkbox"/>
Histic epipedon	<input type="checkbox"/>	Organic content	<input type="checkbox"/>	Histic epipedon	<input type="checkbox"/>	Organic content	<input type="checkbox"/>
Sulfidic odor	<input type="checkbox"/>	Organic streaking	<input type="checkbox"/>	Sulfidic odor	<input type="checkbox"/>	Organic streaking	<input type="checkbox"/>
Aquic moisture reg.	<input type="checkbox"/>	Local hydric soils list	<input type="checkbox"/>	Aquic moisture reg.	<input type="checkbox"/>	Local hydric soils list	<input type="checkbox"/>
Gleyed	<input type="checkbox"/>	National hydric soils list	<input type="checkbox"/>	Gleyed	<input type="checkbox"/>	National hydric soils list	<input type="checkbox"/>
Low Chroma	<input checked="" type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>	Low Chroma	<input type="checkbox"/>	Other (ex. in Remarks)	<input type="checkbox"/>

Remarks: Meets the hydric soil criterion. Remarks: Does not meet the hydric soil criterion.

WETLAND DETERMINATION			WETLAND DETERMINATION		
Hydrophytic vegetation present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydrophytic vegetation present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Wetland hydrology present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Wetland hydrology present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Hydric soils present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydric soils present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Sampling point within a wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Sampling point within a wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

SKETCH:



# DATA SHEET: WETLAND DELINEATION

Feature ID: Sec1-W24 (W03018A)  
Project/Site: I-69  
Client: QK4  
Investigator(s): Sarah Tofari, Christi Darcy  
Aerial Sheet No.: 18a

Segment: 1  
Date: 7/20/2004  
County: Gibson  
State: IN  
Approx MP:

WETLAND			UPLAND		
Normal Circumstances?	<u>X</u> Yes	<u></u> No	Normal Circumstances?	<u>X</u> Yes	<u></u> No
Significantly Disturbed?	<u></u> Yes	<u>X</u> No	Significantly Disturbed?	<u></u> Yes	<u>X</u> No
Potential Problem Area?	<u></u> Yes	<u>X</u> No	Potential Problem Area?	<u></u> Yes	<u>X</u> No
USACE Jurisdictional?	<u>X</u> Yes	<u></u> No	USACE Jurisdictional?	<u></u> Yes	<u>X</u> No

VEGETATION			VEGETATION		
DOMINANT SPECIES	STRATUM	INDICATOR	DOMINANT SPECIES	STRATUM	INDICATOR
<i>Phalaris arundinacea</i>	Herb	FACW+	<i>Lespedeza sp.</i>	Herb	FACU
<i>Impatiens capensis</i>	Herb	FACW	<i>Rubus pensylvanica</i>	Vine	FACU
<i>Salix nigra</i>	Tree	OBL	<i>Solidago altissima</i>	Herb	FACU
<i>Pilea pumila</i>	Herb	FACW	<i>Phytolacca americana</i>	Herb	FAC-
<i>Ludwigia alternifolia</i>	Herb	OBL			
Percent of Species OBL, FACW, FAC (excl. FAC-)	<u>100%</u>		Percent of Species OBL, FACW, FAC (excl. FAC-)	<u>0%</u>	

Remarks: Meets the hydrophytic vegetation criterion.

Remarks: Does not meet the hydrophytic vegetation criterion.

HYDROLOGY			HYDROLOGY		
Field Indicators:	Depth of Surface Water:	<u>2" - 36"</u>	Field Indicators:	Depth of Surface Water:	<u>None</u>
	Depth to Free Water:	<u>surface to 12"</u>		Depth to Free Water:	<u>&gt;16"</u>
	Depth to Saturated Soil:	<u>surface</u>		Depth to Saturated Soil:	<u>&gt;16"</u>
PRIMARY INDICATORS	SECONDARY INDICATORS		PRIMARY INDICATORS	SECONDARY INDICATORS	
Inundated	<u>X</u>	Ox. root channels	Inundated	<u></u>	Ox. root channels
Saturated <12"	<u>X</u>	Water-stained leaves	Saturated <12"	<u></u>	Water-stained leaves
Water marks	<u></u>	Local soil survey data	Water marks	<u></u>	Local soil survey data
Sediment deposit	<u></u>	FAC- Neutral test	Sediment deposit	<u></u>	FAC- Neutral test
Drainage patterns	<u>X</u>	Other (ex. in Remarks)	Drainage patterns	<u></u>	Other (ex. in Remarks)

Remarks: Meets the hydrology criterion.

Remarks: Does not meet the hydrology criterion.

SOILS				SOILS			
Map Unit Name:	<u>Hosmer silt loam, 6 to 12 percent slopes, severely erode</u>			Map Unit Name:	<u>Hosmer silt loam, 6 to 12 percent slopes, severely erode</u>		
Profile Description:				Profile Description:			
DEPTH	MATRIX	MOTTLE	TEXTURE	DEPTH	MATRIX	MOTTLE	TEXTURE
<u>0-16"</u>	<u>10YR 5/2</u>	<u>10YR 4/6 and 10YR 5/6</u>	<u>silty clay loam</u>	<u>0-16"</u>	<u>10YR 5/4</u>	<u></u>	<u>silt loam</u>
HYDRIC SOIL INDICATORS				HYDRIC SOIL INDICATORS			
Histosol	<u></u>	Concretions	<u></u>	Histosol	<u></u>	Concretions	<u></u>
Histic epipedon	<u></u>	Organic content	<u></u>	Histic epipedon	<u></u>	Organic content	<u></u>
Sulfidic odor	<u></u>	Organic streaking	<u></u>	Sulfidic odor	<u></u>	Organic streaking	<u></u>
Aquic moisture reg.	<u></u>	Local hydric soils list	<u></u>	Aquic moisture reg.	<u></u>	Local hydric soils list	<u></u>
Gleyed	<u></u>	National hydric soils list	<u></u>	Gleyed	<u></u>	National hydric soils list	<u></u>
Low Chroma	<u>X</u>	Other (ex. in Remarks)	<u></u>	Low Chroma	<u></u>	Other (ex. in Remarks)	<u></u>

Remarks: Meets the hydric soil criterion.

Remarks: Does not meet the hydric soil criterion.

WETLAND DETERMINATION			WETLAND DETERMINATION		
Hydrophytic vegetation present?	<u>X</u> Yes	<u></u> No	Hydrophytic vegetation present?	<u></u> Yes	<u>X</u> No
Wetland hydrology present?	<u>X</u> Yes	<u></u> No	Wetland hydrology present?	<u></u> Yes	<u>X</u> No
Hydric soils present?	<u>X</u> Yes	<u></u> No	Hydric soils present?	<u></u> Yes	<u>X</u> No
Sampling point within a wetland?	<u>X</u> Yes	<u></u> No	Sampling point within a wetland?	<u></u> Yes	<u>X</u> No

SKETCH:

# DATA SHEET: WETLAND DELINEATION

Feature ID: Sec1-W26 (W03018F)  
Project/Site: I-69  
Client: QK4  
Investigator(s): Sarah Tofari, Christi Darcy  
Aerial Sheet No.: 18a

Segment: 1  
Date: 7/20/2004  
County: Gibson  
State: IN  
Approx MP:

WETLAND			UPLAND		
Normal Circumstances?	<u>X</u> Yes	<u></u> No	Normal Circumstances?	<u>X</u> Yes	<u></u> No
Significantly Disturbed?	<u></u> Yes	<u>X</u> No	Significantly Disturbed?	<u></u> Yes	<u>X</u> No
Potential Problem Area?	<u></u> Yes	<u>X</u> No	Potential Problem Area?	<u></u> Yes	<u>X</u> No
USACE Jurisdictional?	<u>X</u> Yes	<u></u> No	USACE Jurisdictional?	<u></u> Yes	<u>X</u> No

VEGETATION			VEGETATION		
DOMINANT SPECIES	STRATUM	INDICATOR	DOMINANT SPECIES	STRATUM	INDICATOR
<i>Acer saccharinum</i>	Tree	FACW	<i>Lespedeza</i> sp.	Herb	FACU
<i>Salix nigra</i>	Tree	OBL	<i>Rubus pensylvanica</i>	Vine	FACU
<i>Boehmeria cylindrica</i>	Herb	OBL	<i>Solidago altissima</i>	Herb	FACU
<i>Phalaris arundinacea</i>	Herb	FACW+	<i>Phytolacca americana</i>	Herb	FAC-
<i>Solidago canadensis</i>	Herb	FACU			

Percent of Species OBL, FACW, FAC (excl. FAC-) 80% Percent of Species OBL, FACW, FAC (excl. FAC-) 0%

Remarks: Meets the hydrophytic vegetation criterion. Remarks: Does not meet the hydrophytic vegetation criterion.

HYDROLOGY			HYDROLOGY		
Field Indicators:	Depth of Surface Water:	<u>None</u>	Field Indicators:	Depth of Surface Water:	<u>None</u>
	Depth to Free Water:	<u>&gt;16"</u>		Depth to Free Water:	<u>&gt;16"</u>
	Depth to Saturated Soil:	<u>&gt;16"</u>		Depth to Saturated Soil:	<u>&gt;16"</u>
PRIMARY INDICATORS	SECONDARY INDICATORS		PRIMARY INDICATORS	SECONDARY INDICATORS	
Inundated	<u></u>	Ox. root channels	<u></u>	<u></u>	
Saturated <12"	<u></u>	Water-stained leaves	<u></u>	<u></u>	
Water marks	<u></u>	Local soil survey data	<u></u>	<u></u>	
Sediment deposit	<u></u>	FAC- Neutral test	<u>X</u>	<u></u>	
Drainage patterns	<u>X</u>	Other (ex. in Remarks)	<u></u>	<u></u>	

Remarks: Meets the hydrology criterion. Remarks: Does not meet the hydrology criterion.

SOILS				SOILS			
Map Unit Name:	<u>Hosmer silt loam, 6 to 12 percent slope, severely erode</u>			Map Unit Name:	<u>Hosmer silt loam, 6 to 12 percent slope, severely erode</u>		
Profile Description:				Profile Description:			
DEPTH	MATRIX	MOTTLE	TEXTURE	DEPTH	MATRIX	MOTTLE	TEXTURE
<u>0-16"</u>	<u>10YR 5/2</u>	<u>10YR 4/6 and 10YR 5/6</u>	<u>silty clay loam</u>	<u>0-16"</u>	<u>10YR 5/4</u>	<u></u>	<u>silt loam</u>
HYDRIC SOIL INDICATORS				HYDRIC SOIL INDICATORS			
Histosol	<u></u>	Concretions	<u></u>	Histosol	<u></u>	Concretions	<u></u>
Histic epipedon	<u></u>	Organic content	<u></u>	Histic epipedon	<u></u>	Organic content	<u></u>
Sulfidic odor	<u></u>	Organic streaking	<u></u>	Sulfidic odor	<u></u>	Organic streaking	<u></u>
Aquic moisture reg.	<u></u>	Local hydric soils list	<u></u>	Aquic moisture reg.	<u></u>	Local hydric soils list	<u></u>
Gleyed	<u></u>	National hydric soils list	<u></u>	Gleyed	<u></u>	National hydric soils list	<u></u>
Low Chroma	<u>X</u>	Other (ex. in Remarks)	<u></u>	Low Chroma	<u></u>	Other (ex. in Remarks)	<u></u>

Remarks: Meets the hydric soil criterion. Remarks: Does not meet the hydric soil criterion.

WETLAND DETERMINATION			WETLAND DETERMINATION		
Hydrophytic vegetation present?	<u>X</u> Yes	<u></u> No	Hydrophytic vegetation present?	<u></u> Yes	<u>X</u> No
Wetland hydrology present?	<u>X</u> Yes	<u></u> No	Wetland hydrology present?	<u></u> Yes	<u>X</u> No
Hydric soils present?	<u>X</u> Yes	<u></u> No	Hydric soils present?	<u></u> Yes	<u>X</u> No
Sampling point within a wetland?	<u>X</u> Yes	<u></u> No	Sampling point within a wetland?	<u></u> Yes	<u>X</u> No

SKETCH:



# DATA SHEET: WETLAND DELINEATION

Feature ID: Sec1-W28 (W03018A)  
Project/Site: I-69  
Client: QK4  
Investigator(s): Sarah Tofari, Christi Darcy  
Aerial Sheet No.: 18a

Segment: 1  
Date: 7/20/2004  
County: Gibson  
State: IN  
Approx MP:

WETLAND			UPLAND		
Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
USACE Jurisdictional?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	USACE Jurisdictional?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

VEGETATION			VEGETATION		
DOMINANT SPECIES	STRATUM	INDICATOR	DOMINANT SPECIES	STRATUM	INDICATOR
<i>Phalaris arundinacea</i>	Herb	FACW+	<i>Lespedeza sp.</i>	Herb	FACU
<i>Impatiens capensis</i>	Herb	FACW	<i>Rubus pensylvanica</i>	Vine	FACU
<i>Salix nigra</i>	Tree	OBL	<i>Solidago altissima</i>	Herb	FACU
<i>Pilea pumila</i>	Herb	FACW	<i>Phytolacca americana</i>	Herb	FAC-
<i>Ludwigia peploides</i>	Herb	OBL			
Percent of Species OBL, FACW, FAC (excl. FAC-)	100%		Percent of Species OBL, FACW, FAC (excl. FAC-)	0%	
Remarks:	Meets the hydrophytic vegetation criterion.		Remarks:	Does not meet the hydrophytic vegetation criterion.	

HYDROLOGY			HYDROLOGY		
Field Indicators:	Depth of Surface Water:	<u>2" - 36"</u>	Field Indicators:	Depth of Surface Water:	<u>None</u>
	Depth to Free Water:	<u>surface to 12"</u>		Depth to Free Water:	<u>&gt;16"</u>
	Depth to Saturated Soil:	<u>surface</u>		Depth to Saturated Soil:	<u>&gt;16"</u>
PRIMARY INDICATORS	SECONDARY INDICATORS		PRIMARY INDICATORS	SECONDARY INDICATORS	
Inundated	<input checked="" type="checkbox"/> X	Ox. root channels	Inundated	<input type="checkbox"/>	Ox. root channels
Saturated <12"	<input checked="" type="checkbox"/> X	Water-stained leaves	Saturated <12"	<input type="checkbox"/>	Water-stained leaves
Water marks	<input type="checkbox"/>	Local soil survey data	Water marks	<input type="checkbox"/>	Local soil survey data
Sediment deposit	<input type="checkbox"/>	FAC- Neutral test	Sediment deposit	<input type="checkbox"/>	FAC- Neutral test
Drainage patterns	<input checked="" type="checkbox"/> X	Other (ex. in Remarks)	Drainage patterns	<input type="checkbox"/>	Other (ex. in Remarks)
Remarks:	Meets the hydrology criterion.		Remarks:	Does not meet the hydrology criterion.	

SOILS				SOILS			
Map Unit Name:	Hosmer silt loam, 6 to 12 percent slope, severely erode			Map Unit Name:	Hosmer silt loam, 6 to 12 percent slope, severely erode		
Profile Description:	DEPTH	MATRIX	MOTTLE	Profile Description:	DEPTH	MATRIX	MOTTLE
	0-16"	10YR 5/2	10YR 4/6 and 10YR 5/6		0-16"	10YR 5/4	
			silty clay loam				silt loam
	HYDRIC SOIL INDICATORS				HYDRIC SOIL INDICATORS		
Histosol		Concretions		Histosol		Concretions	
Histic epipedon		Organic content		Histic epipedon		Organic content	
Sulfidic odor		Organic streaking		Sulfidic odor		Organic streaking	
Aquic moisture reg.		Local hydric soils list		Aquic moisture reg.		Local hydric soils list	
Gleyed		National hydric soils list		Gleyed		National hydric soils list	
Low Chroma	X	Other (ex. in Remarks)		Low Chroma		Other (ex. in Remarks)	
Remarks:	Meets the hydric soil criterion.			Remarks:	Does not meet the hydric soil criterion.		

WETLAND DETERMINATION			WETLAND DETERMINATION		
Hydrophytic vegetation present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydrophytic vegetation present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Wetland hydrology present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Wetland hydrology present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Hydric soils present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydric soils present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Sampling point within a wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Sampling point within a wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

SKETCH:

# DATA SHEET: WETLAND DELINEATION

Feature ID: Sec1-W31 (W03018A)  
Project/Site: I-69  
Client: QK4  
Investigator(s): Sarah Tofari, Christi Darcy  
Aerial Sheet No.: 18a

Segment: 1  
Date: 7/20/2004  
County: Gibson  
State: IN  
Approx MP:

WETLAND			UPLAND		
Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Normal Circumstances?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Significantly Disturbed?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No	Potential Problem Area?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
USACE Jurisdictional?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	USACE Jurisdictional?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

VEGETATION			VEGETATION		
DOMINANT SPECIES	STRATUM	INDICATOR	DOMINANT SPECIES	STRATUM	INDICATOR
<i>Phalaris arundinacea</i>	Herb	FACW+	<i>Lespedeza sp.</i>	Herb	FACU
<i>Impatiens capensis</i>	Herb	FACW	<i>Rubus pensylvanica</i>	Vine	FACU
<i>Salix nigra</i>	Tree	OBL	<i>Solidago altissima</i>	Herb	FACU
<i>Pilea pumila</i>	Herb	FACW	<i>Phytolacca americana</i>	Herb	FAC-
<i>Ludwigia peploides</i>	Herb	OBL			
Percent of Species OBL, FACW, FAC (excl. FAC-)	100%		Percent of Species OBL, FACW, FAC (excl. FAC-)	0%	

Remarks: Meets the hydrophytic vegetation criterion.

Remarks: Does not meet the hydrophytic vegetation criterion.

HYDROLOGY			HYDROLOGY		
Field Indicators:	Depth of Surface Water:	2" - 36"	Field Indicators:	Depth of Surface Water:	None
	Depth to Free Water:	surface to 12"		Depth to Free Water:	>16"
	Depth to Saturated Soil:	surface		Depth to Saturated Soil:	>16"
PRIMARY INDICATORS	SECONDARY INDICATORS		PRIMARY INDICATORS	SECONDARY INDICATORS	
Inundated	<input checked="" type="checkbox"/> X	Ox. root channels	Inundated		
Saturated <12"	<input checked="" type="checkbox"/> X	Water-stained leaves	Saturated <12"		
Water marks		Local soil survey data	Water marks		
Sediment deposit		FAC- Neutral test	Sediment deposit		
Drainage patterns	<input checked="" type="checkbox"/> X	Other (ex. in Remarks)	Drainage patterns		

Remarks: Meets the hydrology criterion.

Remarks: Does not meet the hydrology criterion.

SOILS				SOILS			
Map Unit Name:	Hosmer silt loam, 6 to 12 percent slopes, severely erode			Map Unit Name:	Hosmer silt loam, 6 to 12 percent slopes, severely erode		
Profile Description:				Profile Description:			
DEPTH	MATRIX	MOTTLE	TEXTURE	DEPTH	MATRIX	MOTTLE	TEXTURE
0-16"	10YR 5/2	10YR 4/6 and 10YR 5/6	silty clay loam	0-16"	10YR 5/4		silt loam
HYDRIC SOIL INDICATORS				HYDRIC SOIL INDICATORS			
Histosol		Concretions		Histosol		Concretions	
Histic epipedon		Organic content		Histic epipedon		Organic content	
Sulfidic odor		Organic streaking		Sulfidic odor		Organic streaking	
Aquic moisture reg.		Local hydric soils list		Aquic moisture reg.		Local hydric soils list	
Gleyed		National hydric soils list		Gleyed		National hydric soils list	
Low Chroma	<input checked="" type="checkbox"/> X	Other (ex. in Remarks)		Low Chroma		Other (ex. in Remarks)	

Remarks: Meets the hydric soil criterion.

Remarks: Does not meet the hydric soil criterion.

WETLAND DETERMINATION			WETLAND DETERMINATION		
Hydrophytic vegetation present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydrophytic vegetation present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Wetland hydrology present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Wetland hydrology present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Hydric soils present?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Hydric soils present?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Sampling point within a wetland?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No	Sampling point within a wetland?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

SKETCH:

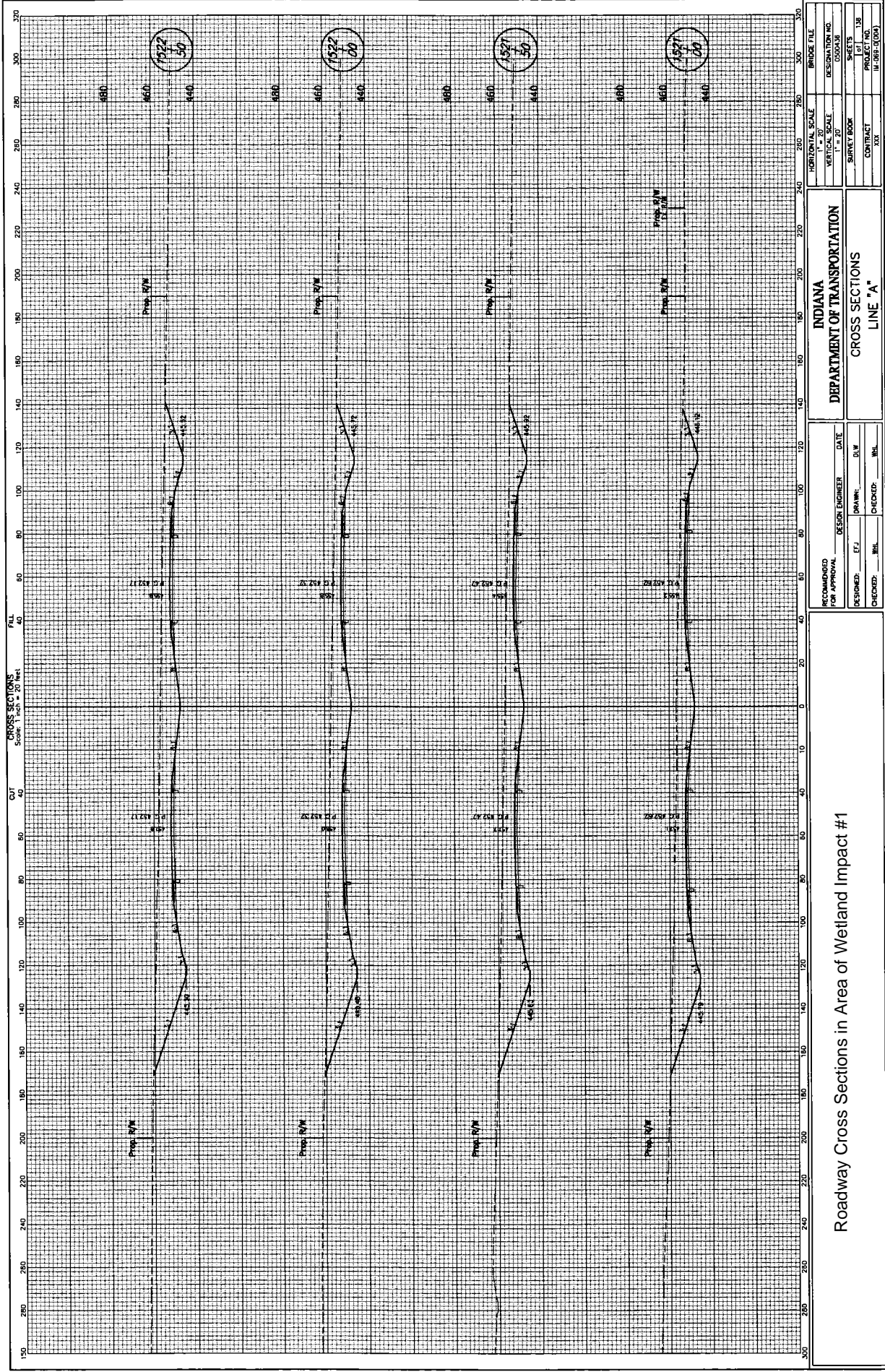


# **401 WQC APPLICATION ATTACHMENT #9**

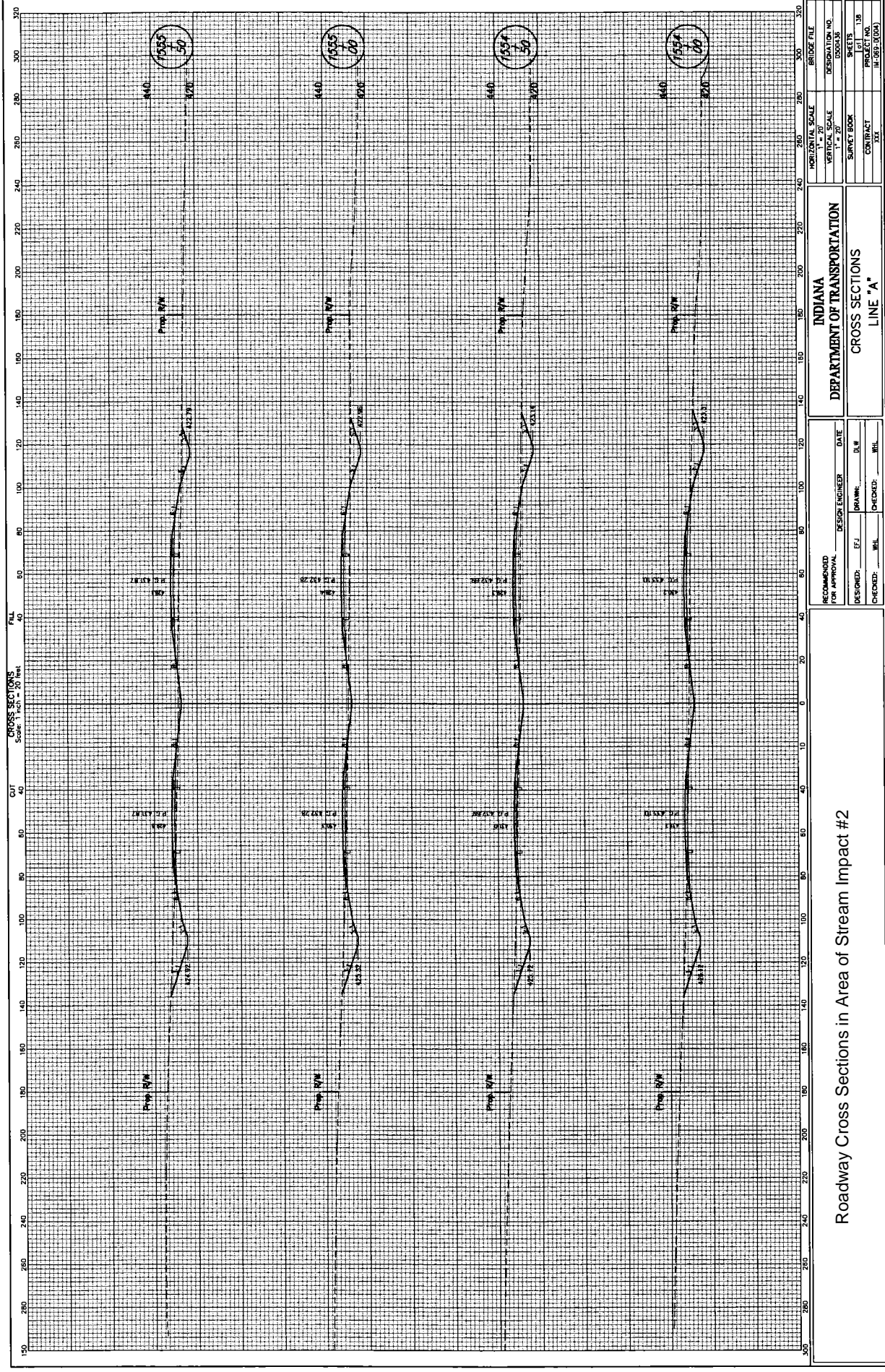
**Cross Sections of Roadway At Water  
Resource Impact Locations**







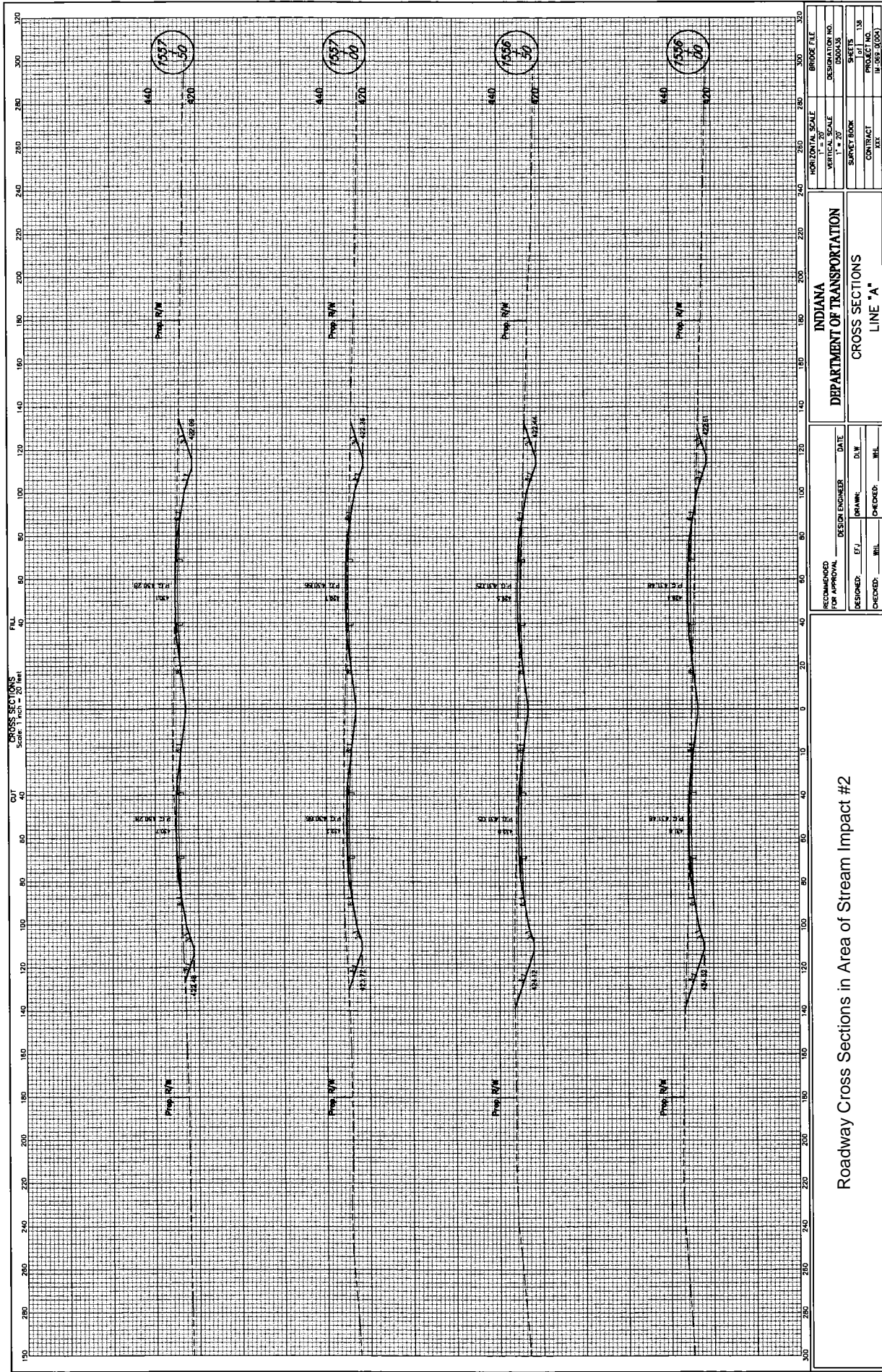
Roadway Cross Sections in Area of Wetland Impact #1



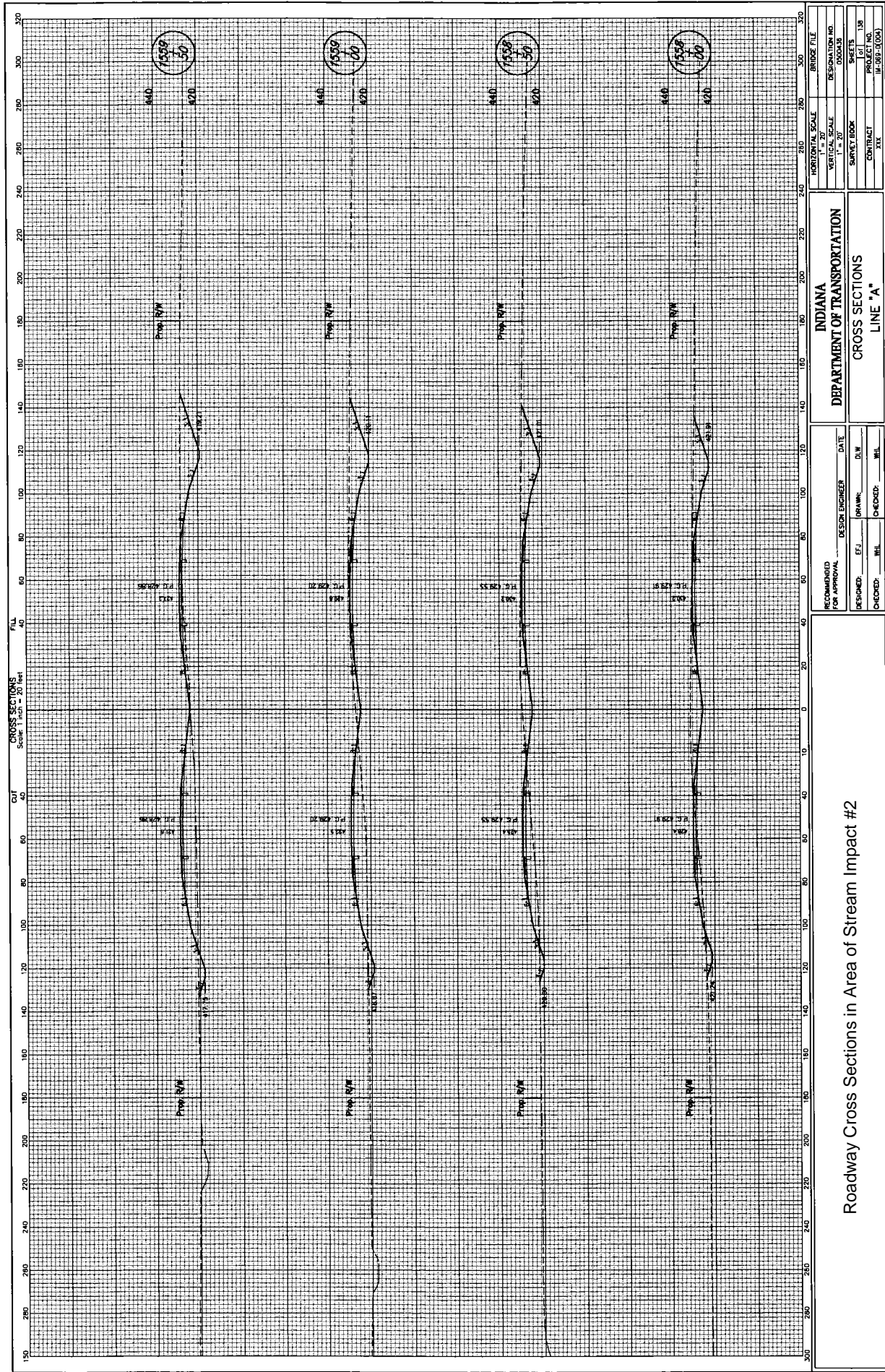
Roadway Cross Sections in Area of Stream Impact #2

RECOMMENDED FOR APPROVAL DESIGNED: <u>          </u> CHECKED: <u>          </u>		DESIGNER: <u>          </u> DATE: <u>          </u> DRAWN: <u>          </u> IN: <u>          </u> CHECKED: <u>          </u> MFL: <u>          </u>		INDIANA DEPARTMENT OF TRANSPORTATION CROSS SECTIONS LINE "A"		BRIDGE FILE HORIZONTAL SCALE VERTICAL SCALE SURVEY BOOK CONTRACT SHEETS PROJECT NO. IN-569-5(004)	
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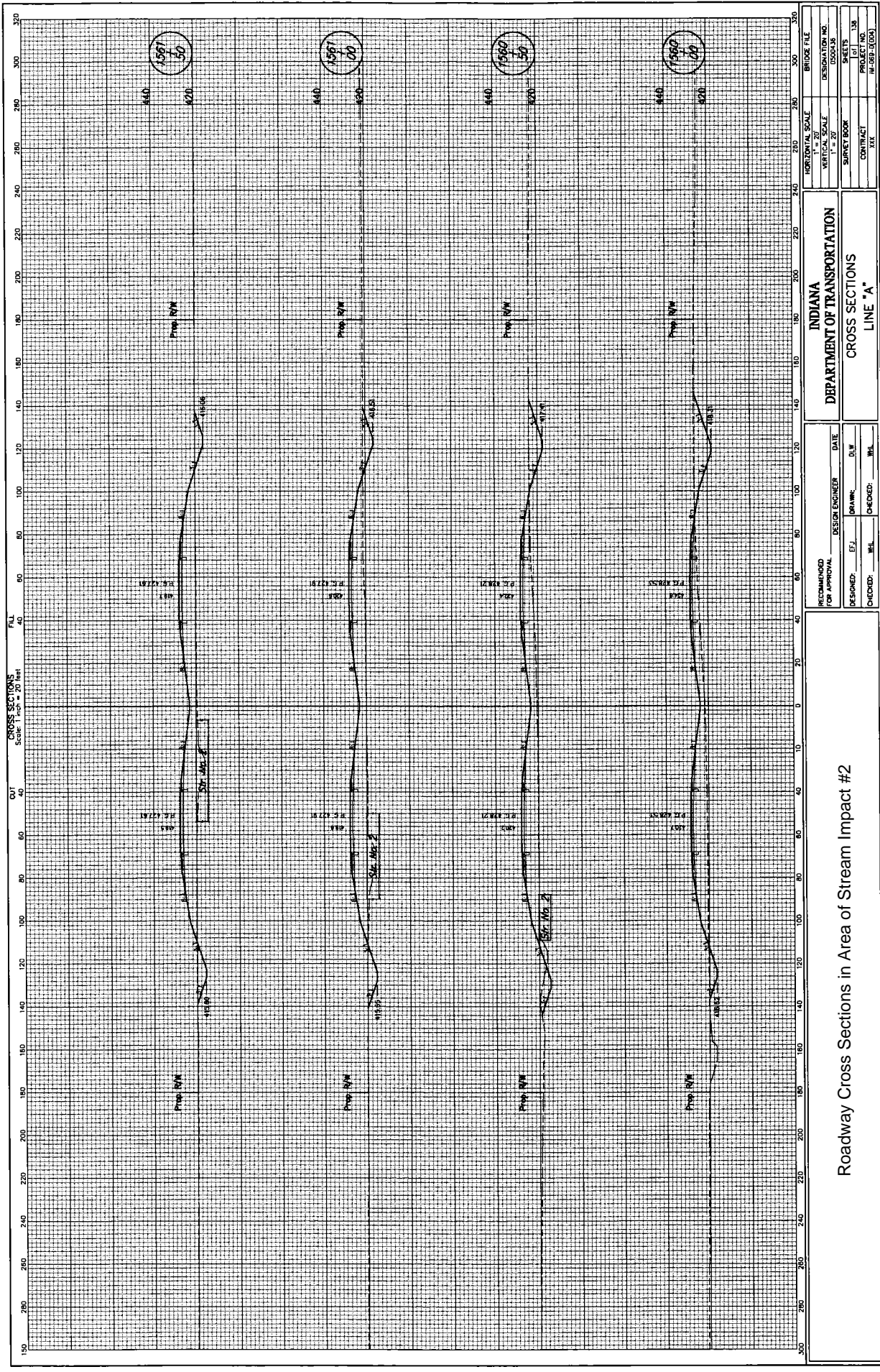




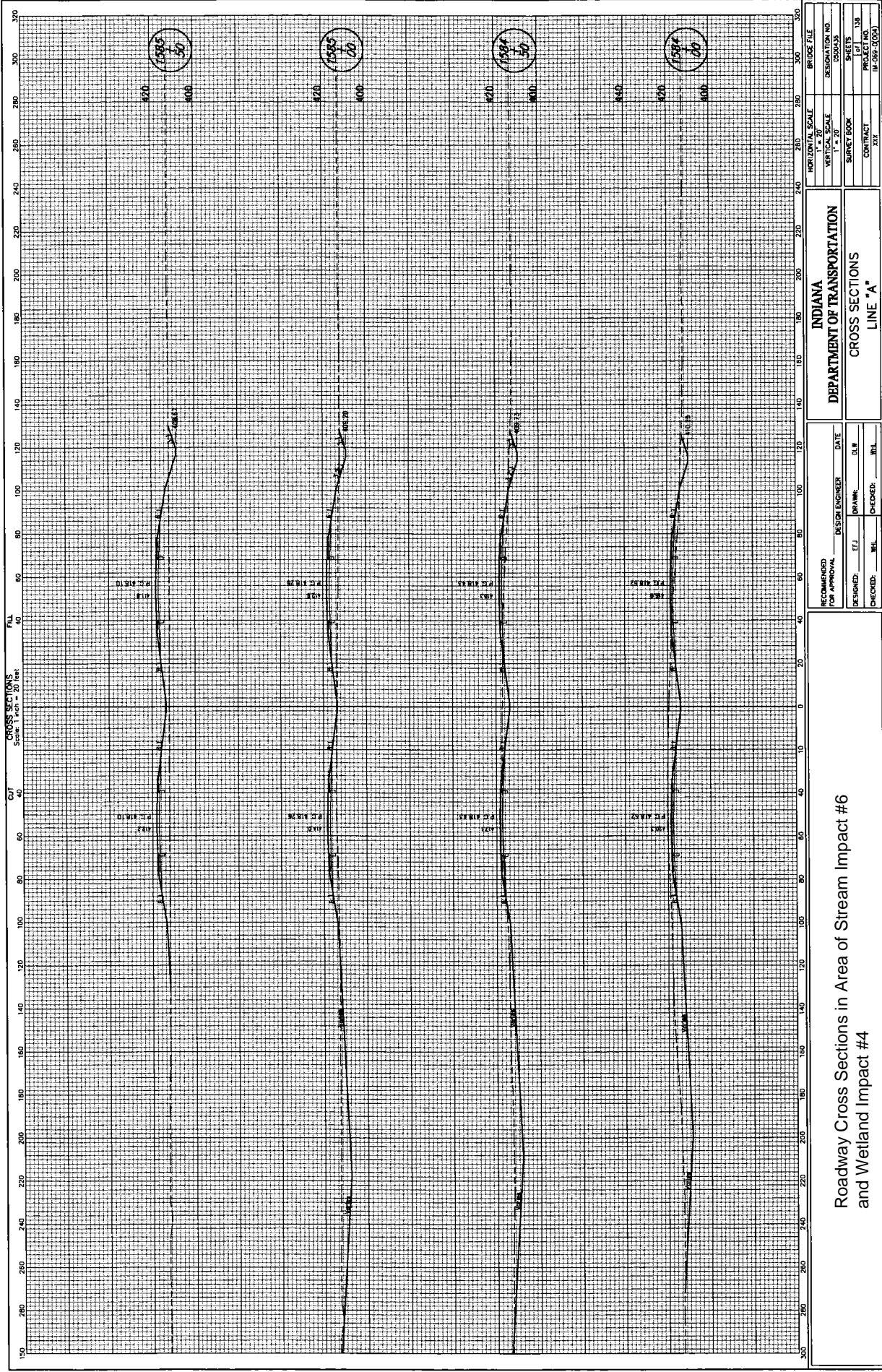
Roadway Cross Sections in Area of Stream Impact #2







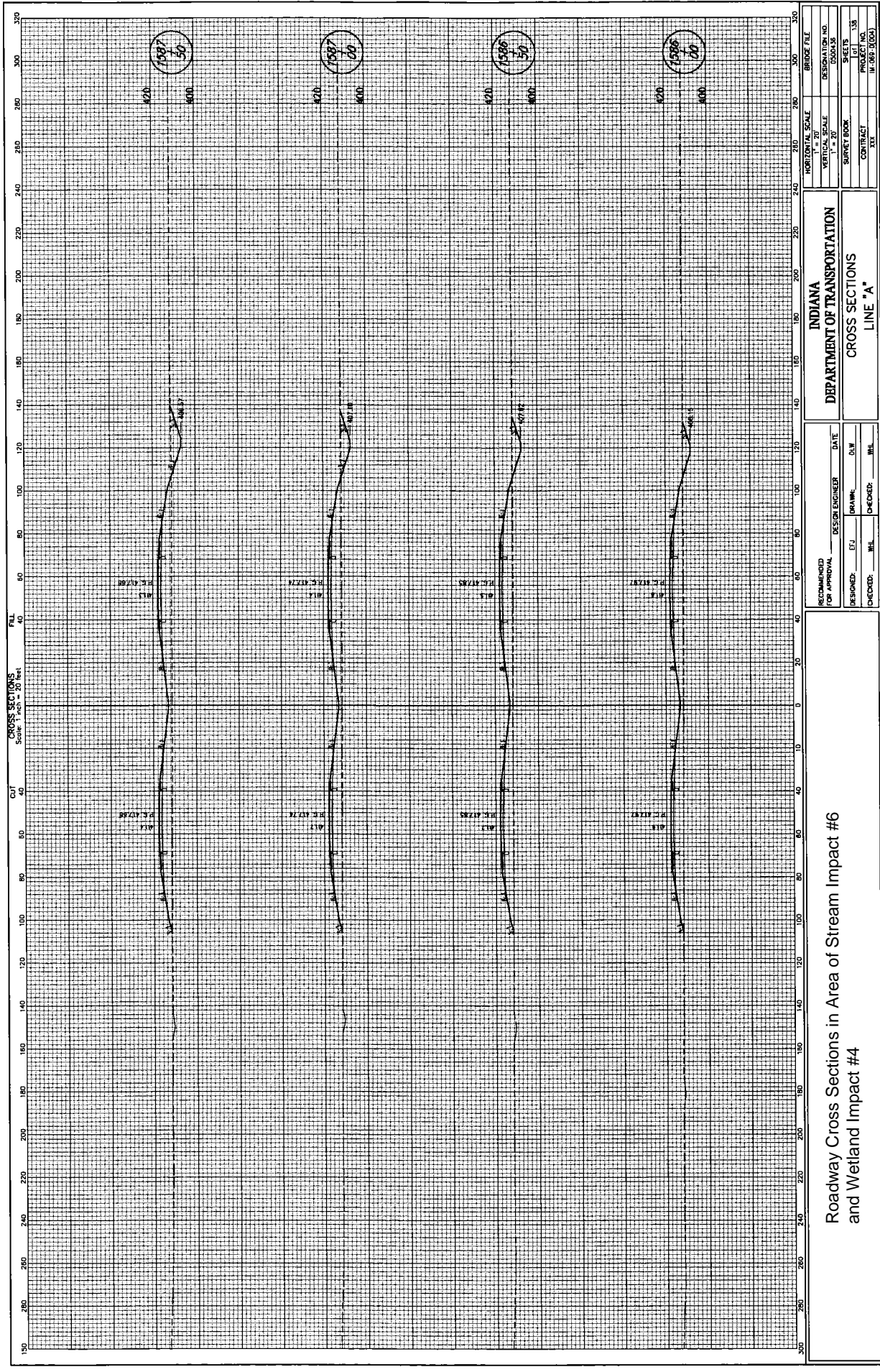
Roadway Cross Sections in Area of Stream Impact #2



# Roadway Cross Sections in Area of Stream Impact #6 and Wetland Impact #4

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER	DATE
DESIGNED: E.L.	DRAWN: D.L.	CHECKED: M.L.	DATE: 11/18/2007
INDIANA DEPARTMENT OF TRANSPORTATION		BRIDGE FILE	
CROSS SECTIONS LINE "A"		DESIGNATION NO. D000435	
		SHEET NO. 138	
		CONTRACT NO. 11-568-004	





ROADWAY CROSS SECTIONS IN AREA OF STREAM IMPACT #6 AND WETLAND IMPACT #4		INDIANA DEPARTMENT OF TRANSPORTATION CROSS SECTIONS LINE "A"	
DESIGNED FOR APPROVAL DESIGNED: EEL CHECKED: RHL	DESIGN ENGINEER DATE: 01/11/00 DRAWN: D.W. CHECKED: RHL	VERTICAL SCALE 1" = 20' SURVEY BOOK CONTRACT PROJECT NO. ILL. 999 0004	HORIZONTAL SCALE 1" = 20' BRIDGE FILE DESIGNATION NO. 0000035 SHEETS 135

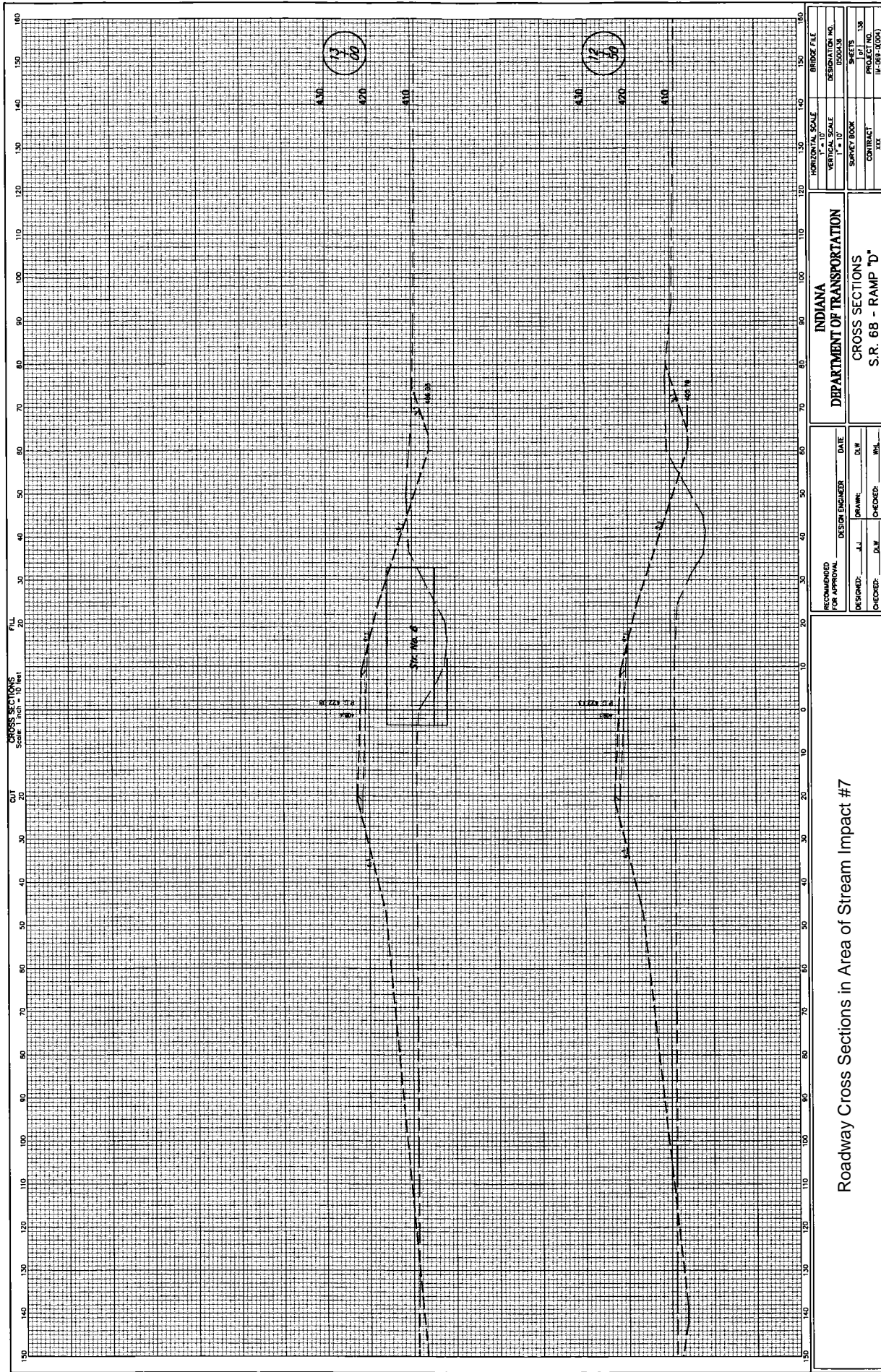


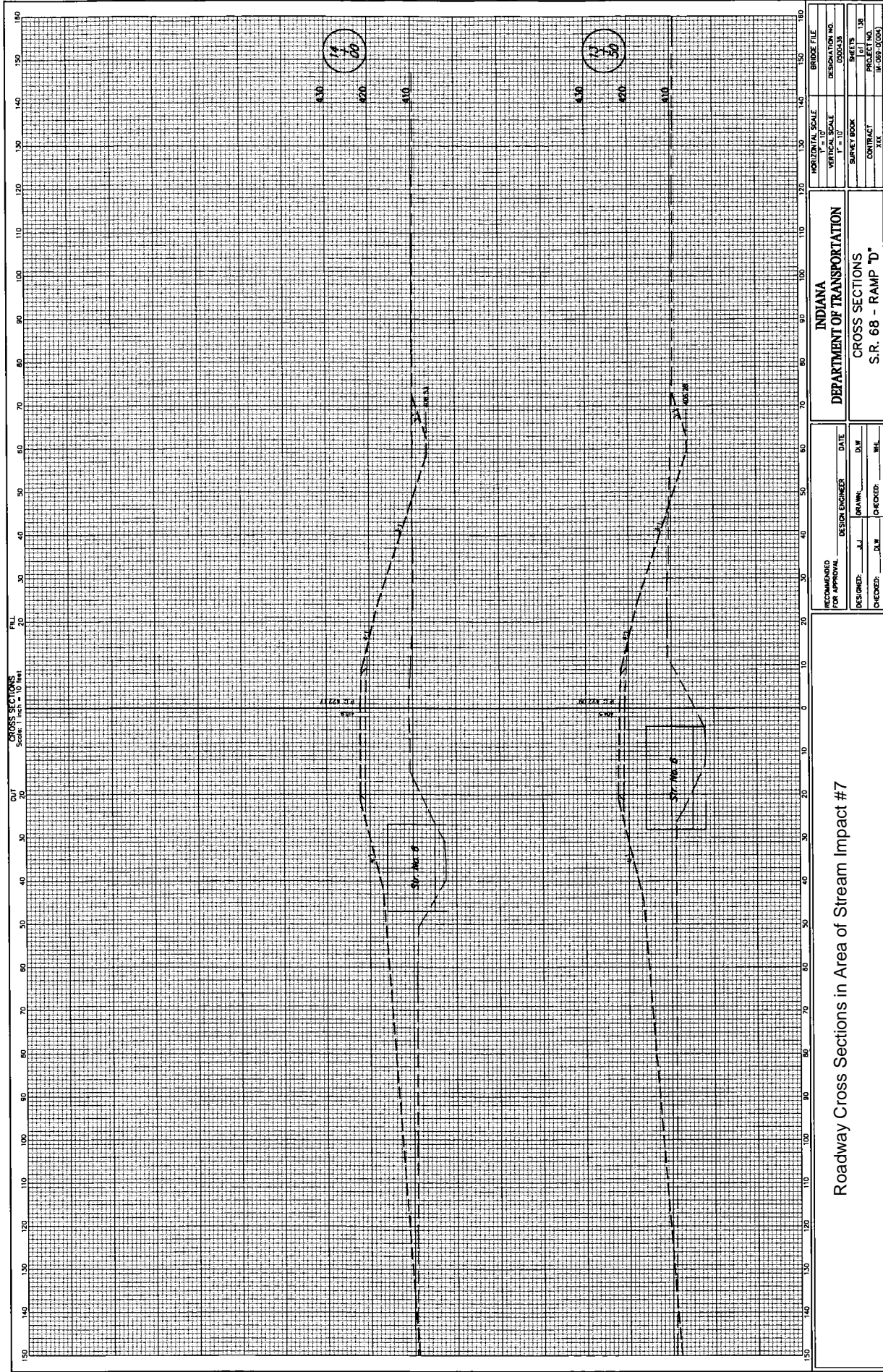






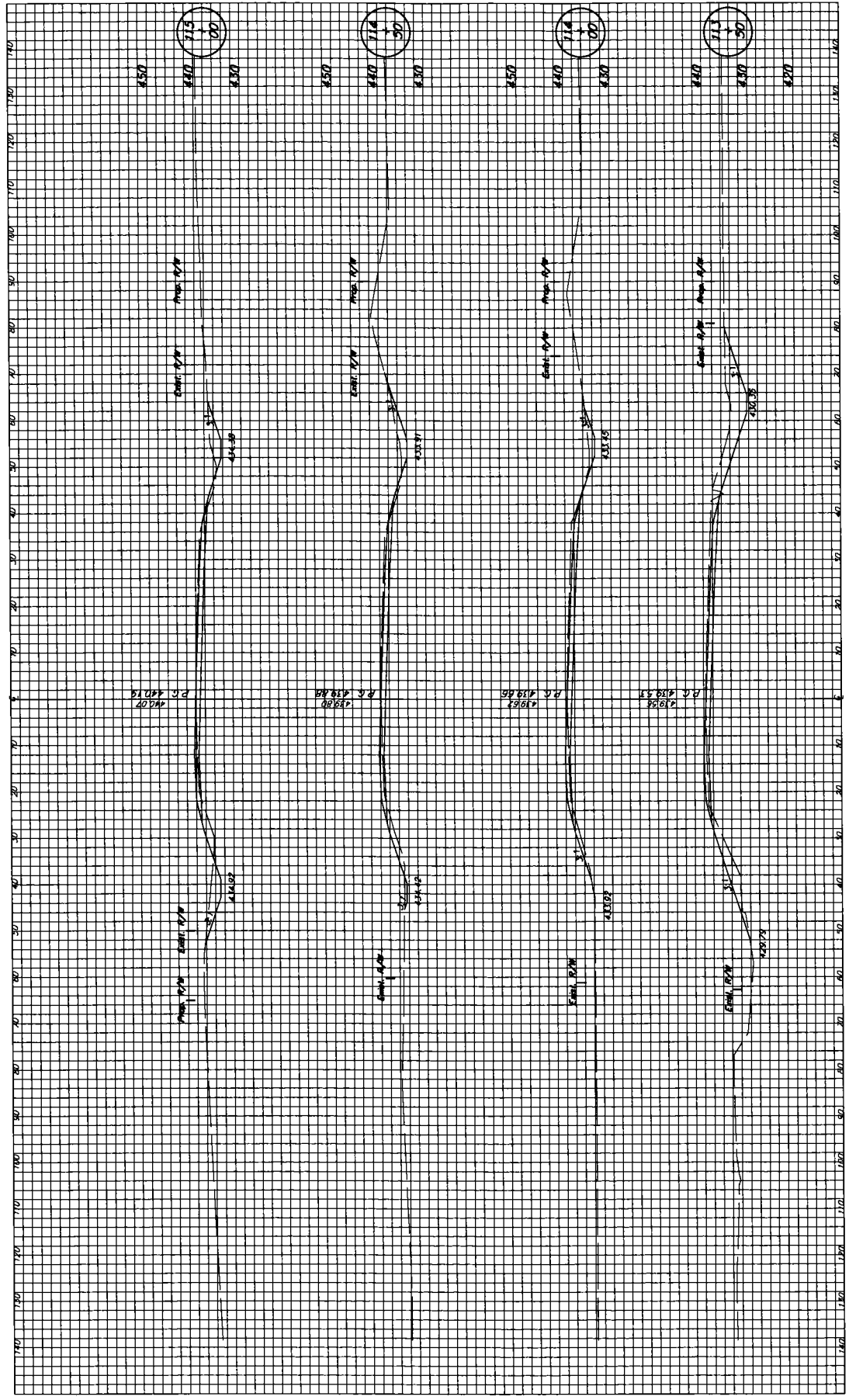












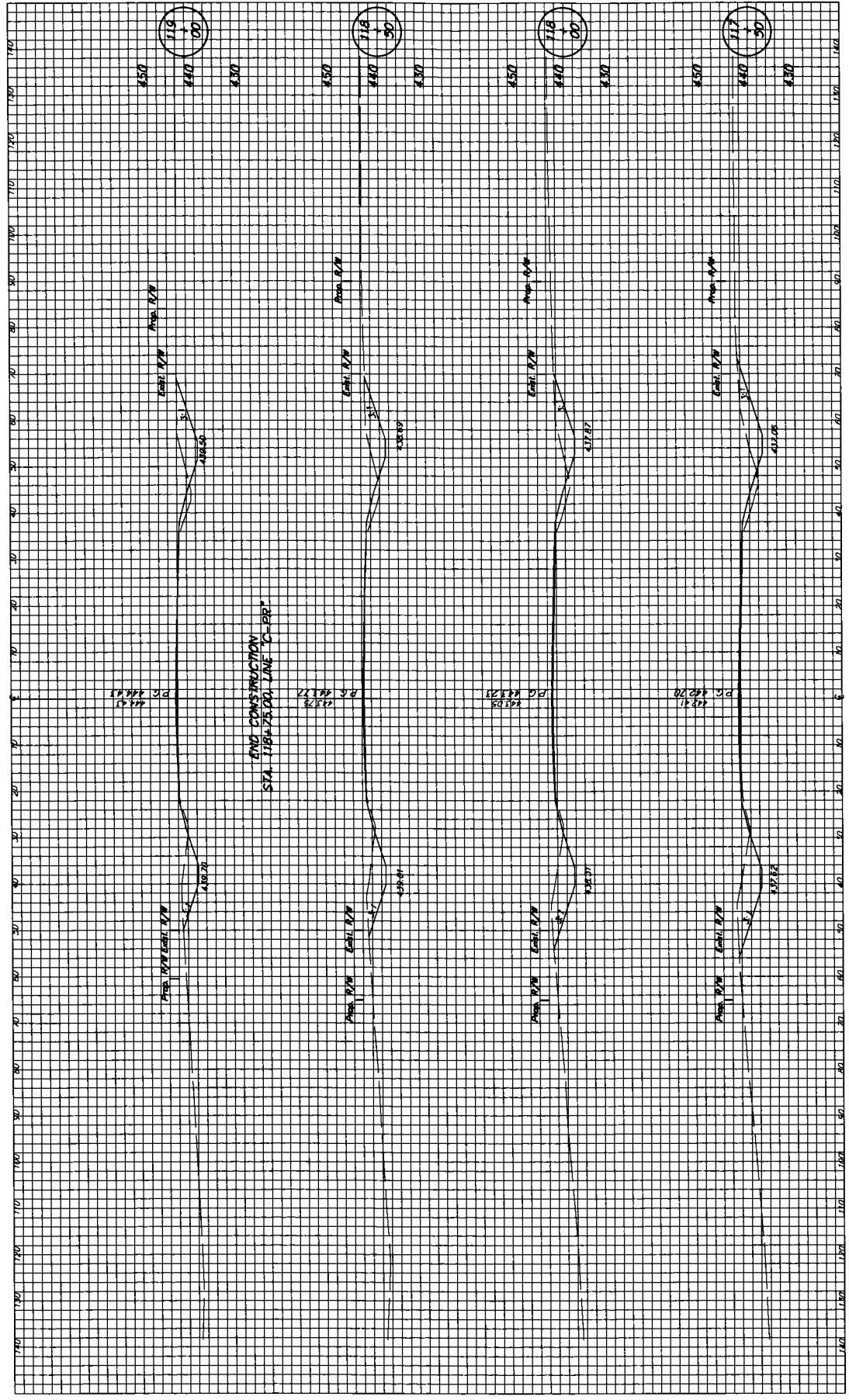
HORIZONTAL SCALE 1" = 10'	BRIDGE FILE
VERTICAL SCALE 1" = 10'	DESIGNATION 0500038
SURVEY BOOK XXX	SHEETS XXX
CONTRACT XXX	PROJECT XXX
	IN-089-0(000)

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
S.R. 57 (RELOCATED) LINE "C-PR"

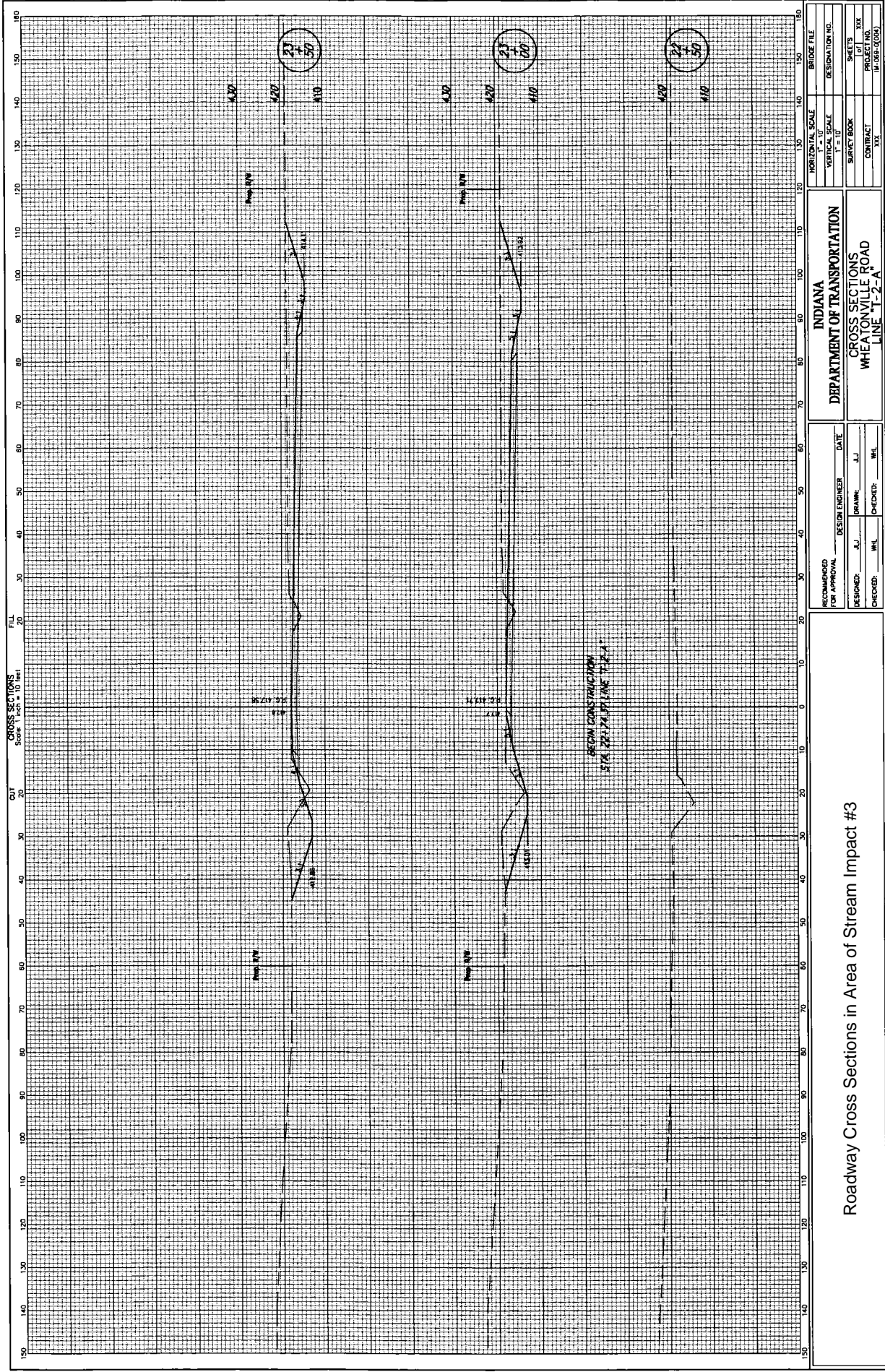
DESIGNED: SMD	DRAWN: MDW
CHECKED: BCP	CHECKED: NRJ

Roadway Cross Sections in Area of Stream Impact #1  
and Wetland Impact #2



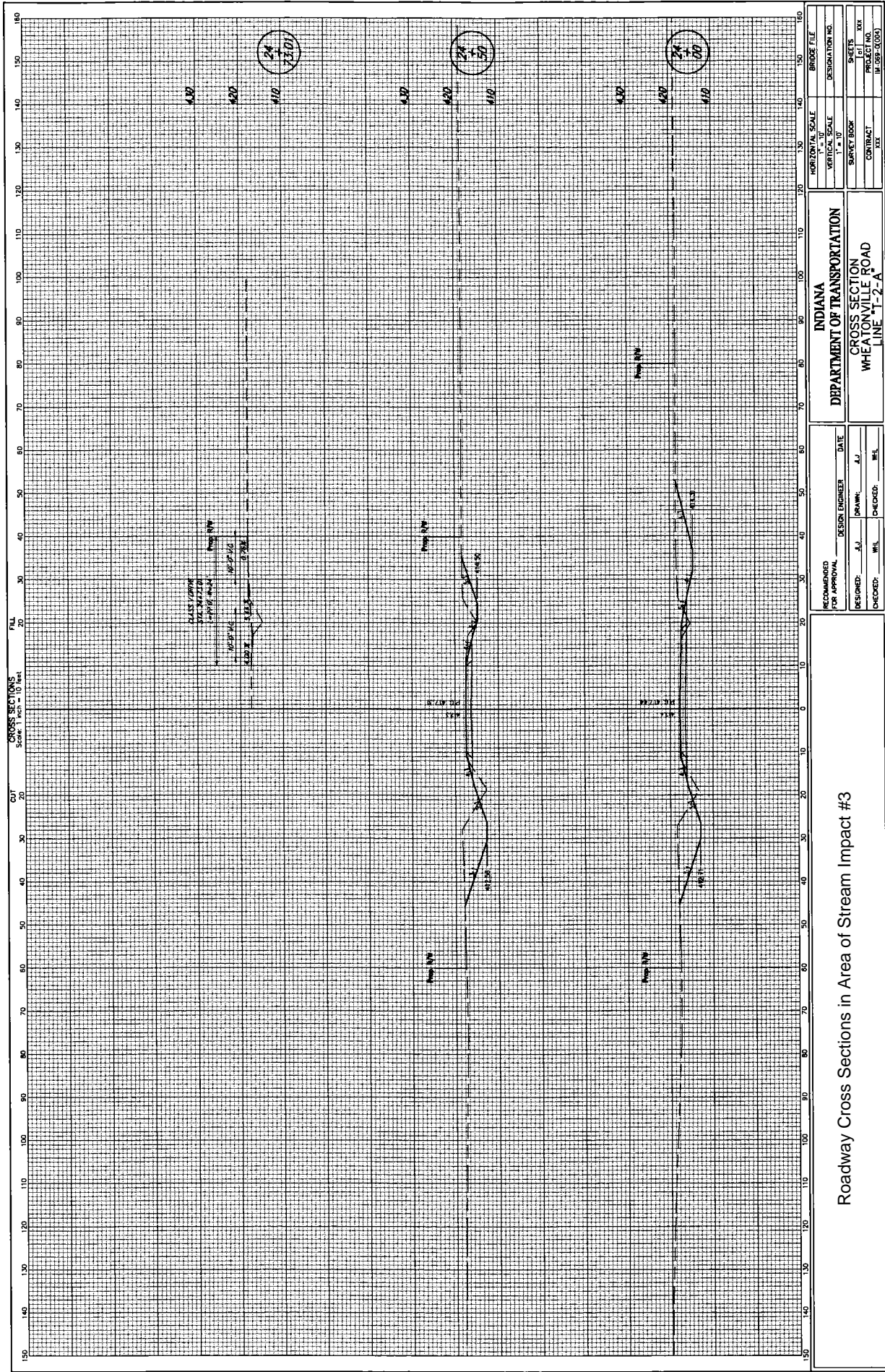


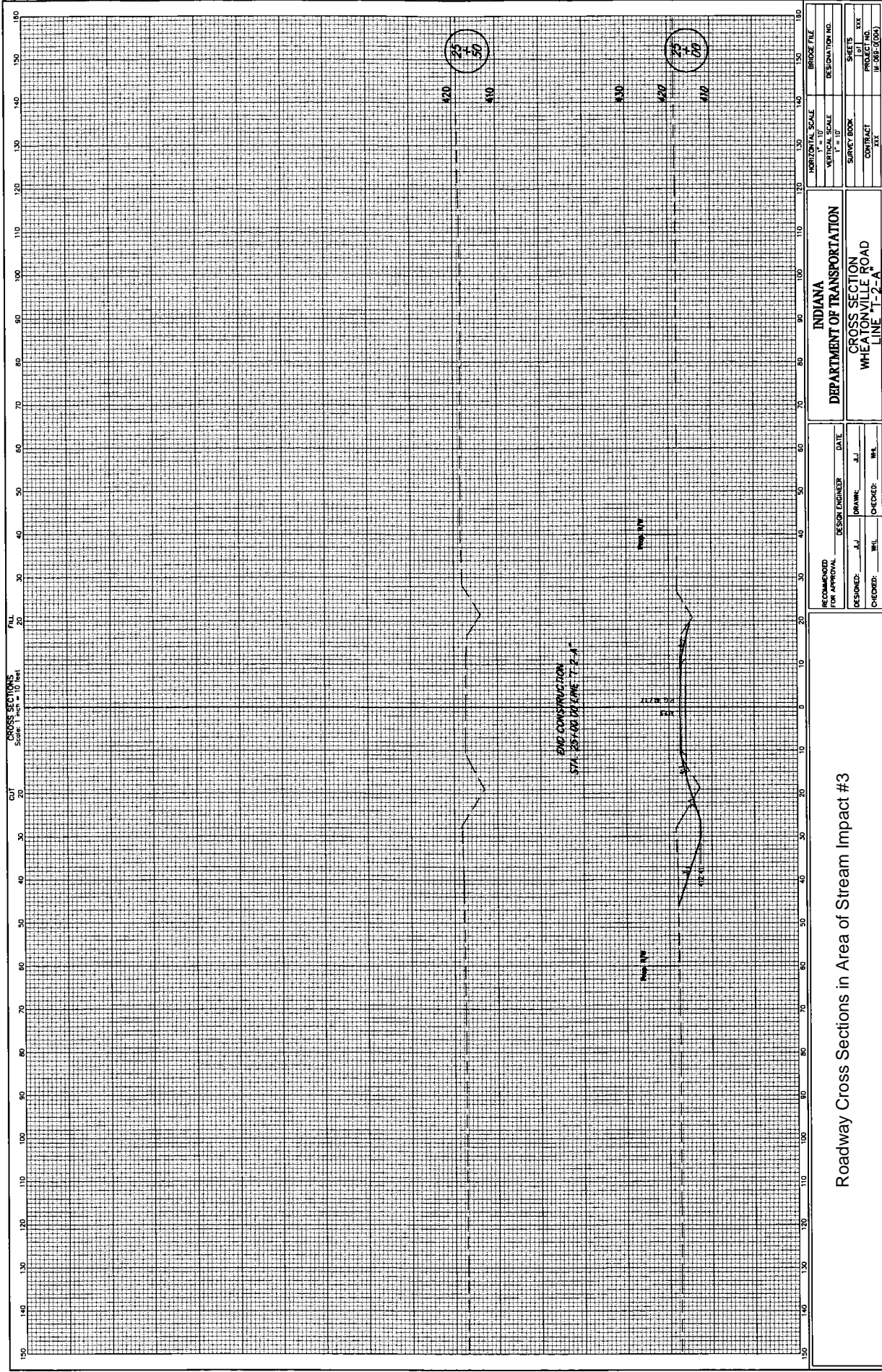
ROADWAY CROSS SECTIONS IN AREA OF STREAM IMPACT #1 AND WETLAND IMPACT #2		INDIANA DEPARTMENT OF TRANSPORTATION		BRIDGE FILE DESIGNATION 0500038	
DESIGNED: SMD CHECKED: BOP		DRAWN: MDW CHECKED: NRJ		SURVEY BOOK SHEETS XXX CONTACT XXX	
S.R. 57 (RELOCATED) LINE "C-PR"		CROSS SECTIONS		PROJECT XXX IN-089-0(004)	



Roadway Cross Sections in Area of Stream Impact #3

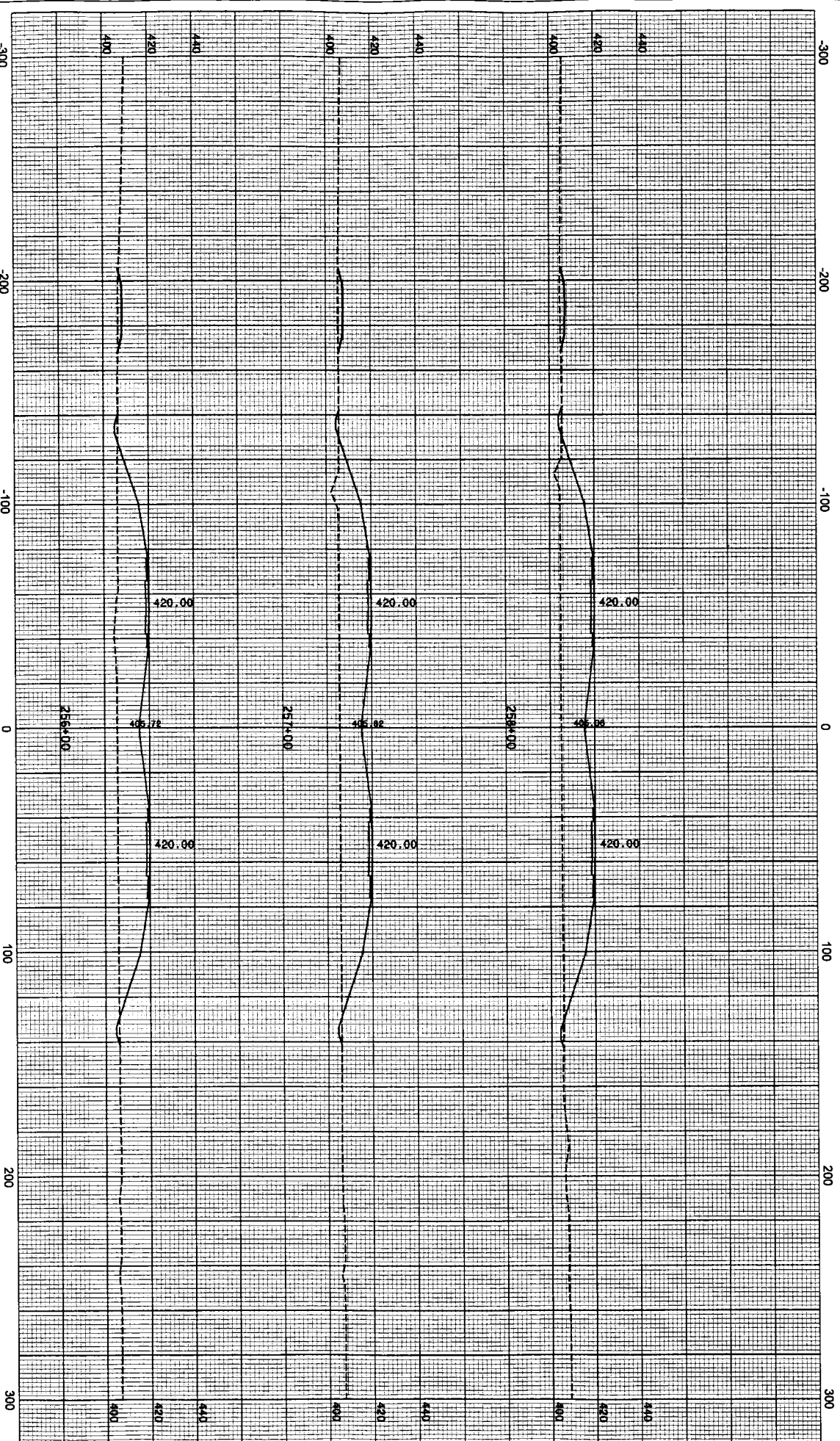








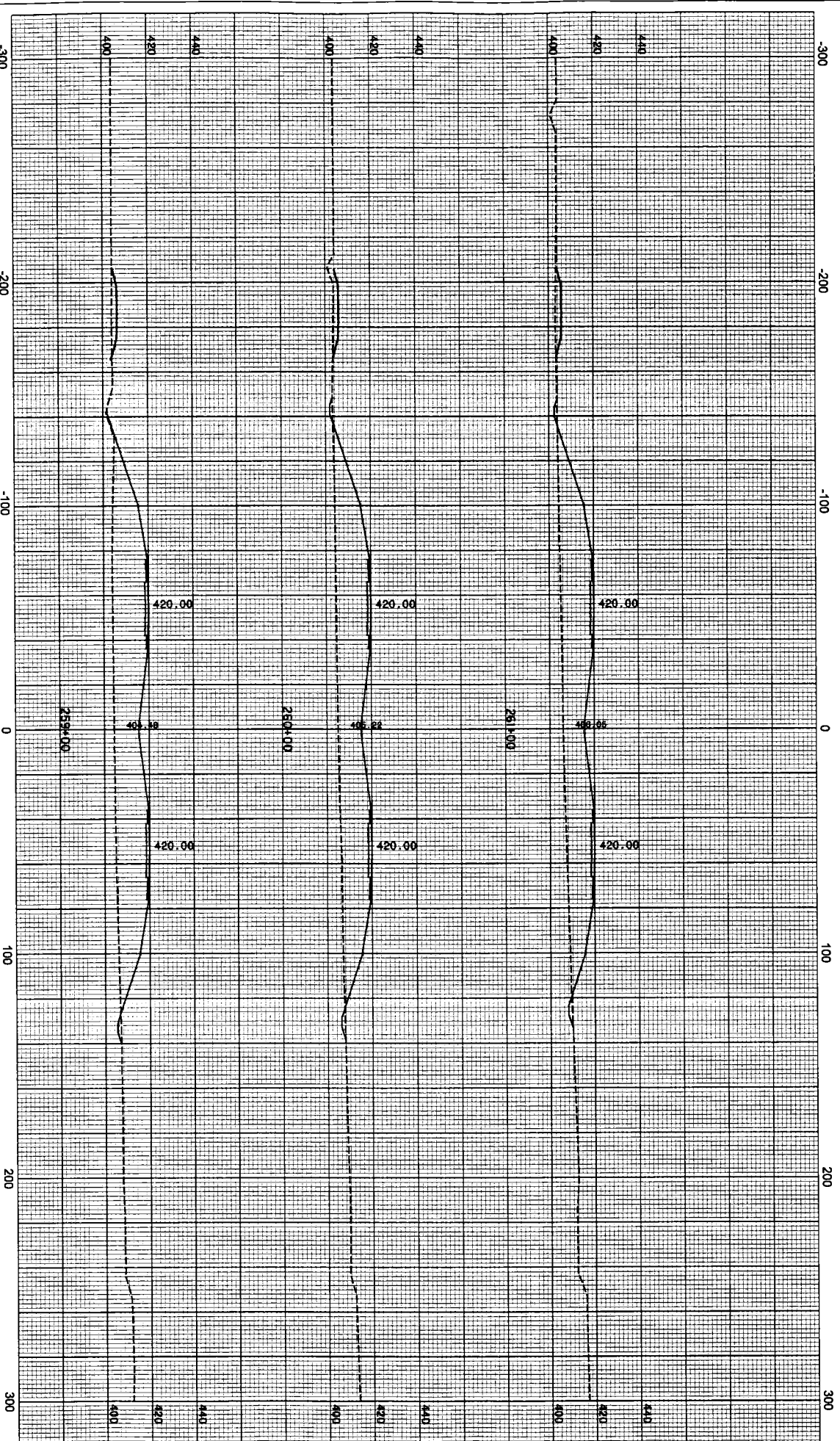




Roadway Cross Sections in Area of Stream Impact #8

RECOMMENDED FOR APPROVAL DESIGNED BY: <u>MM</u> DATE: <u>MM</u> CHECKED BY: <u>MM</u> DATE: <u>MM</u>				DEPARTMENT OF TRANSPORTATION CROSS SECTIONS I-69 - PREFERRED ALTERNATIVE				HORIZONTAL SCALE: <u>1" = 40'</u> VERTICAL SCALE: <u>1" = 10'</u> SHEET NO.: <u>3</u> OF <u>1</u> CONTRACT: <u>      </u> PROJECT: <u>      </u>			
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Roadway Cross Sections in Area of Stream Impact #8

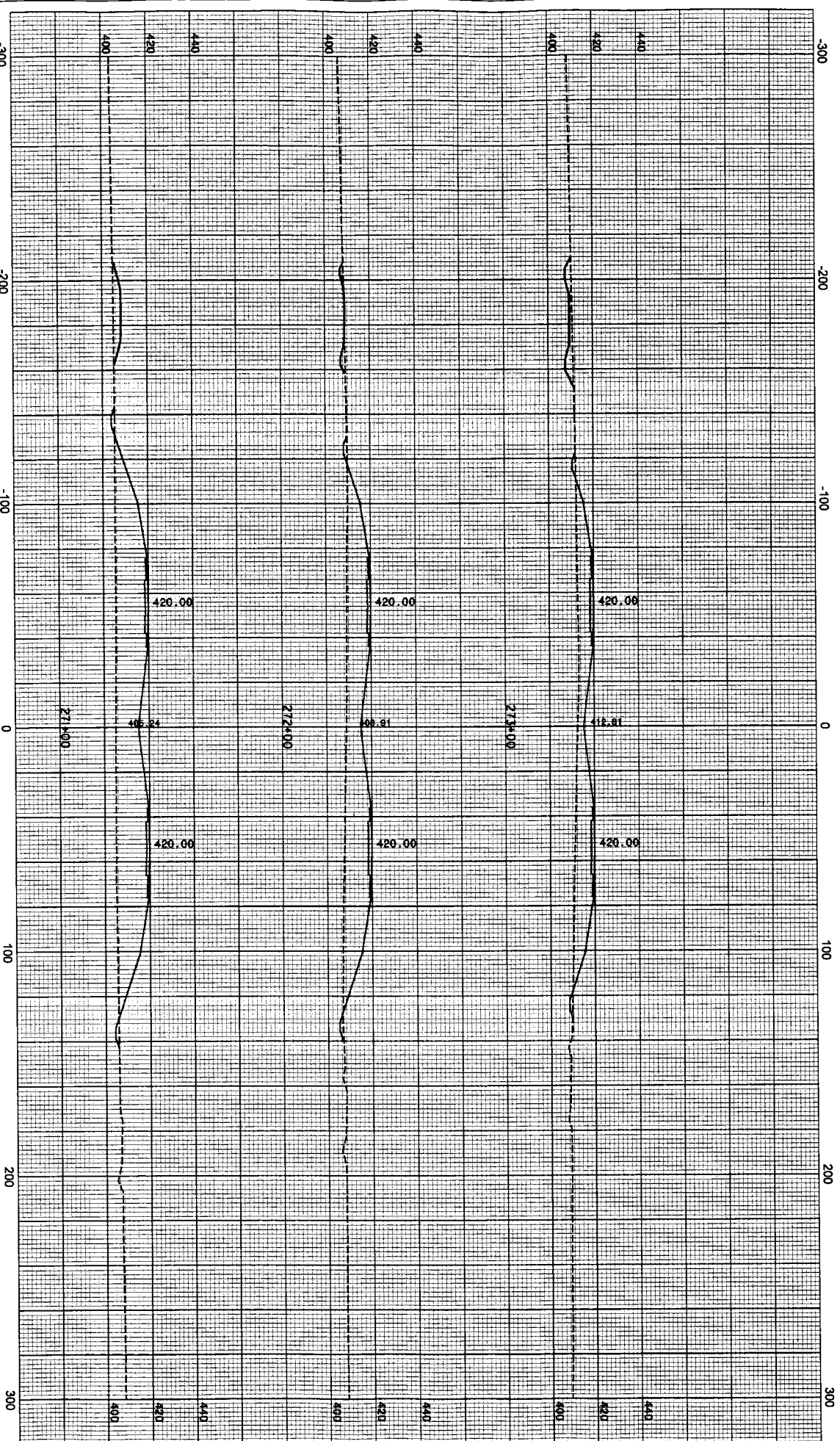
DESIGNED FOR APPROVAL		DESIGN ENGINEER		DATE
DRAWN BY	MM	CHECKED BY	MM	
CHECKED BY	MM	DESIGNED BY	MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 4'	
PROJECT		PROJECT	







Roadway Cross Sections in Area of Stream Impact #9

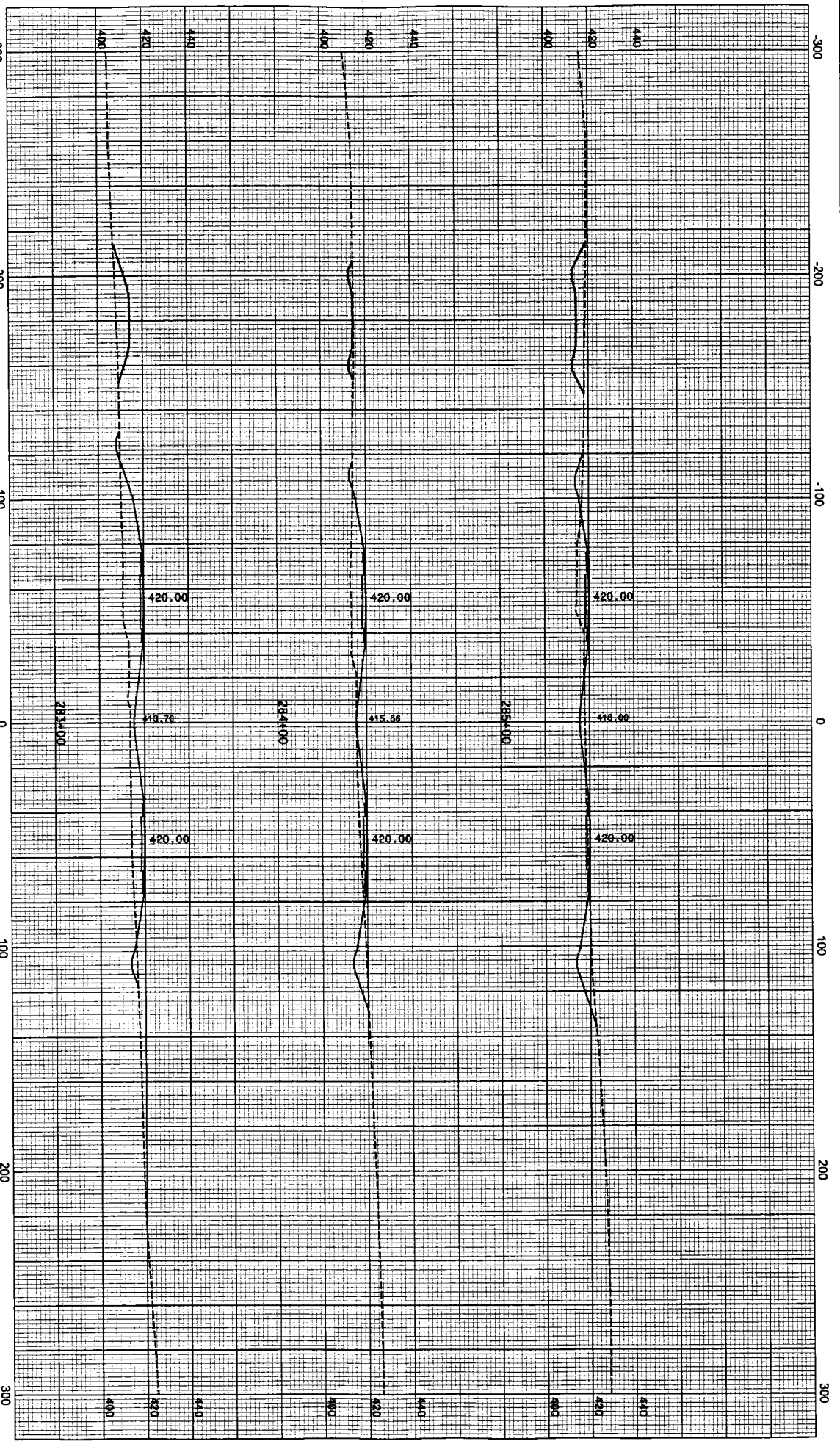
RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE
DRAWN BY	MM	CHECKED BY	MM	
CHECKED BY	MM	CHECKED BY	MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
SHEET NO.		SHEET NO.	
CONTRACT		PROJECT	





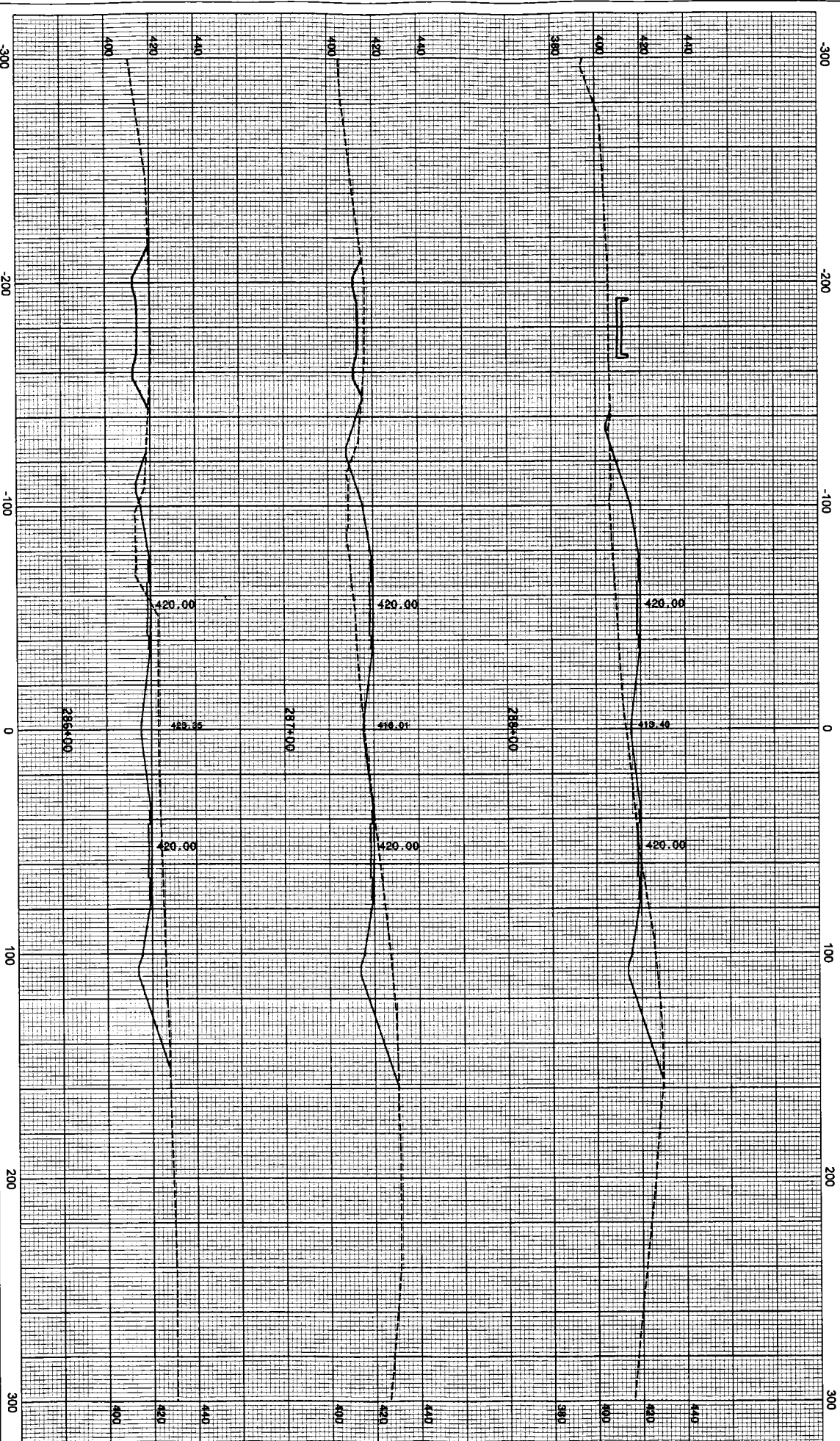


Roadway Cross Sections in Area of Stream Impact #10

RECOMMENDED FOR APPROVAL		DESIGN REQUESTED		DATE
DRAWN	MM	DRAWN	MM	
CHECKED	MM	CHECKED	MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 10'	
SHEET NO.		SHEET NO.	
PROJECT		PROJECT	



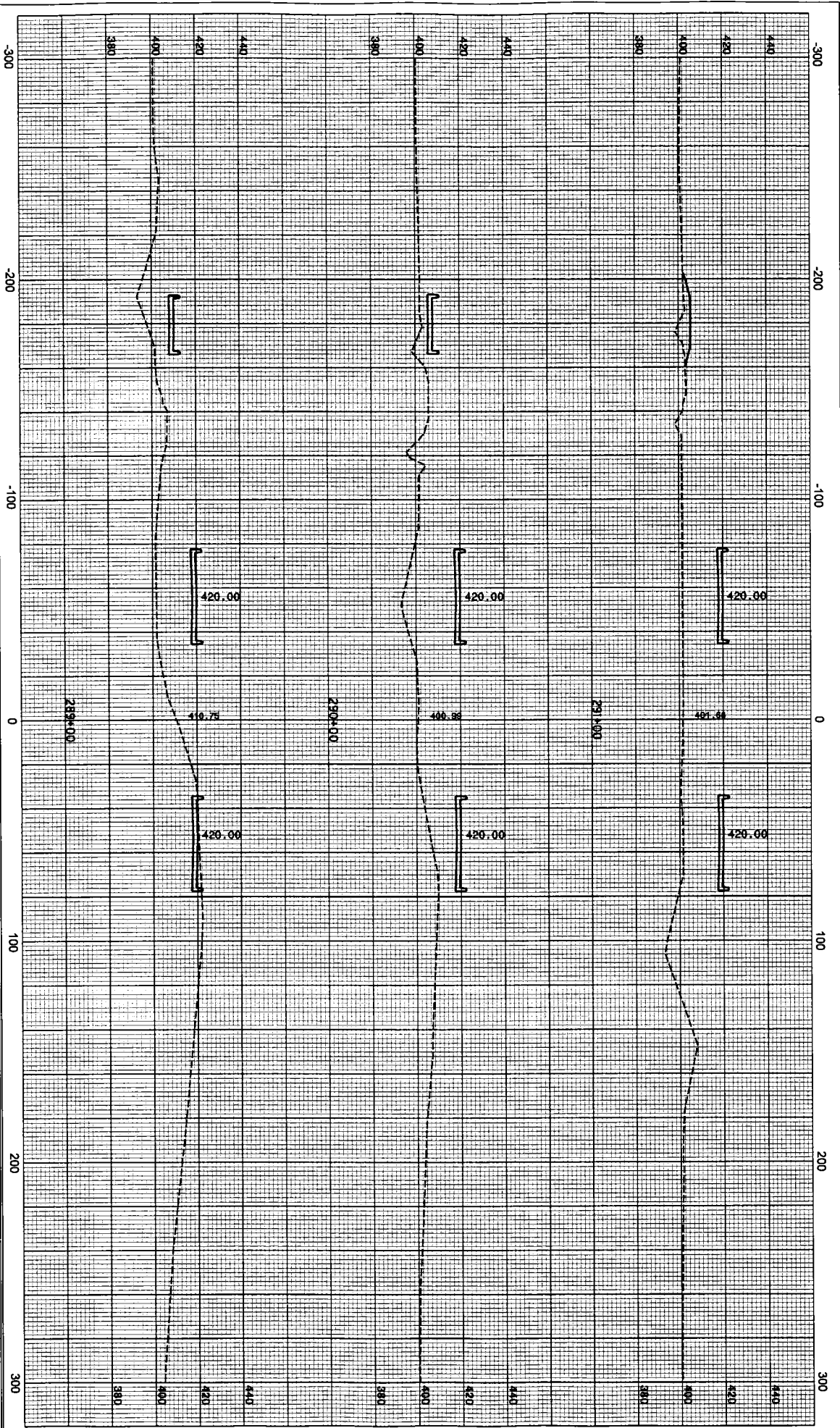
Roadway Cross Sections in Area of Stream Impact #11 and Wetland Impact #5

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE
DRAWN BY	MM	CHECKED BY	MM	
CHECKED BY	MM	DESIGNED BY	MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 10'	
SHEET NO.		PROJECT NO.	
CONTRACT NO.		PROJECT NAME	



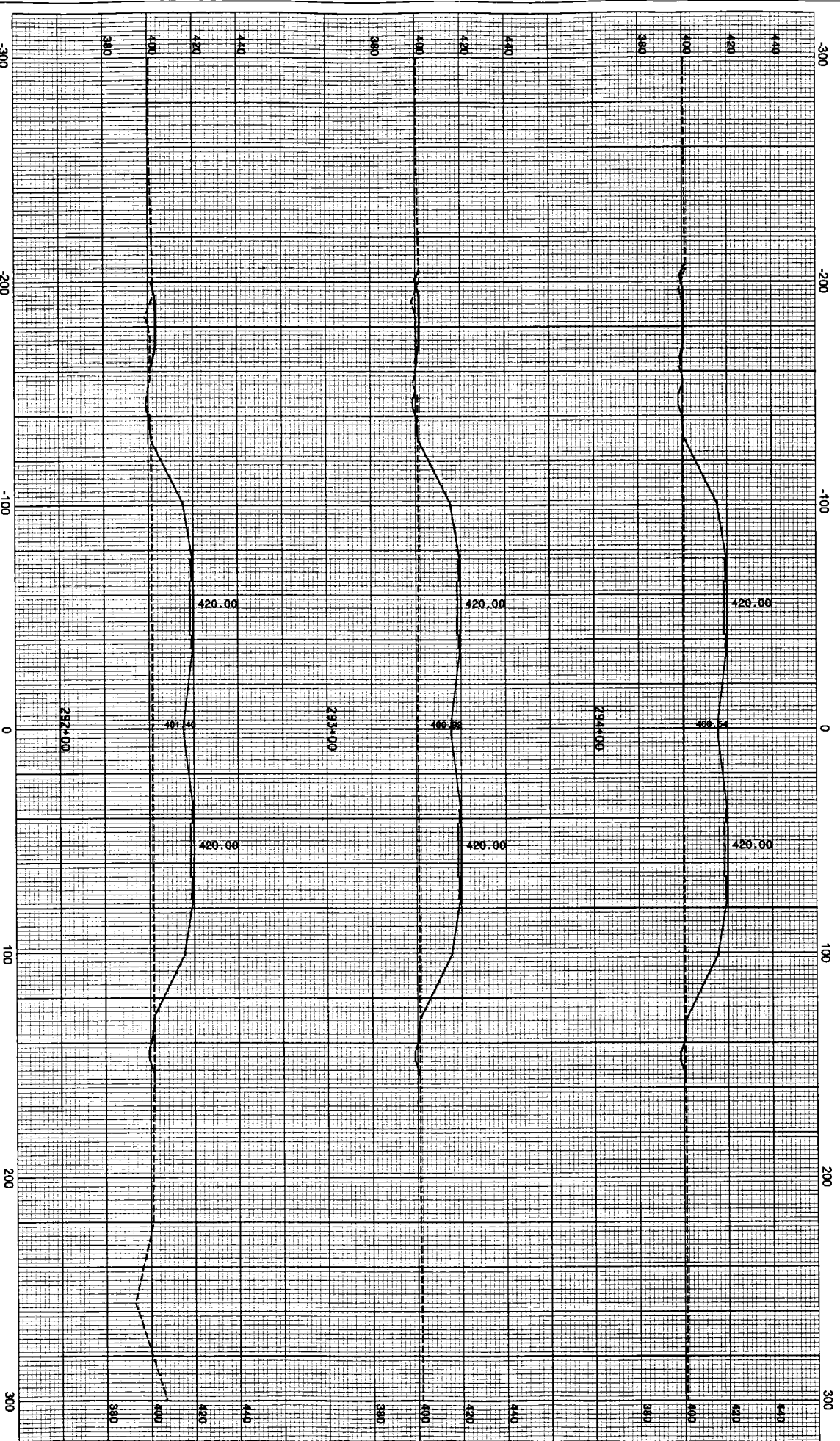


Roadway Cross Sections in Area of Stream Impact #11 and Wetland Impact #5

DESIGNED FOR APPROVAL		DESIGN ENGINEER		DATE	
DRAWN BY	MM	DRAWN BY	MM		
CHECKED BY	MM	CHECKED BY	MM		

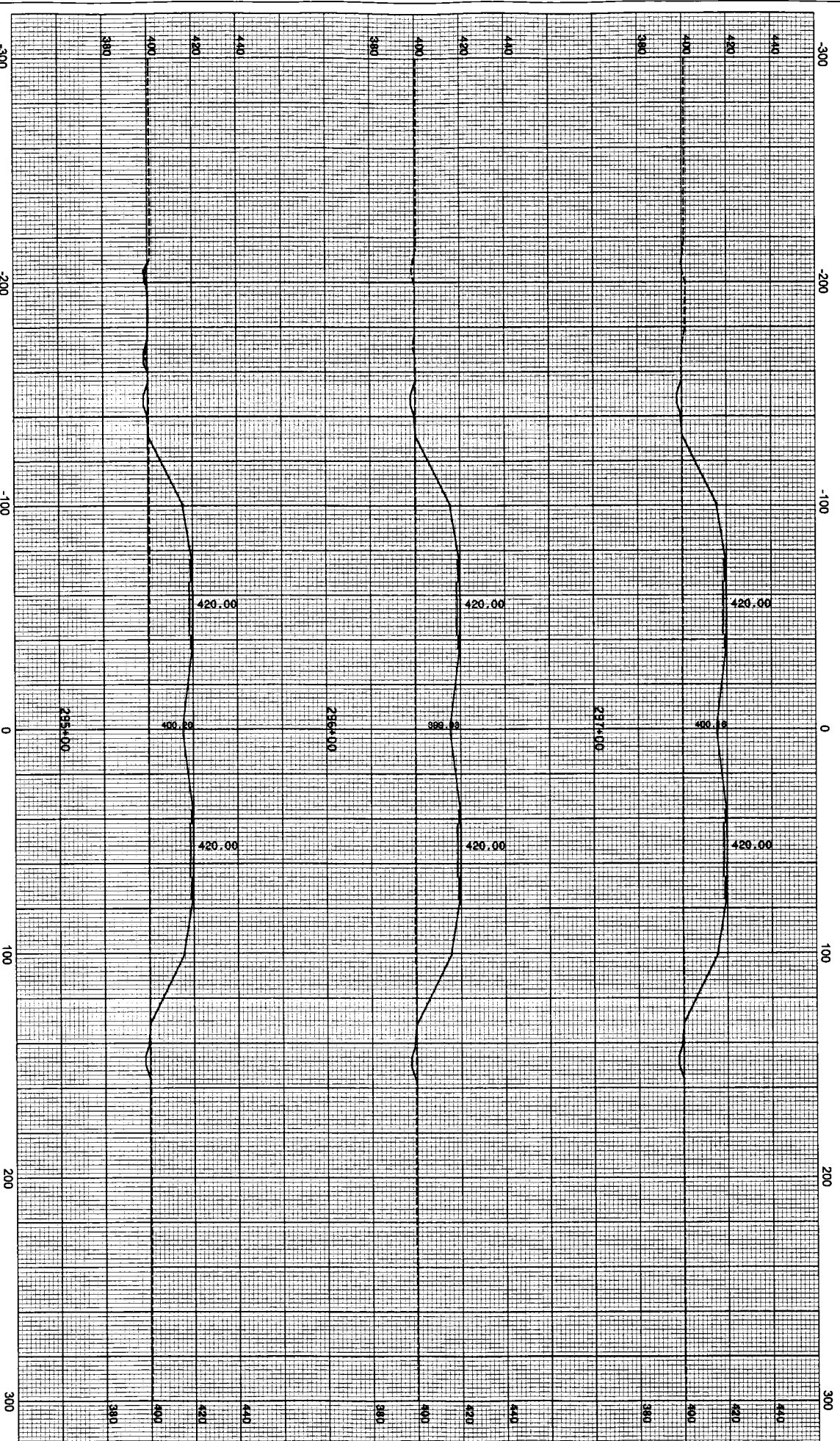
INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE		PROJECT	



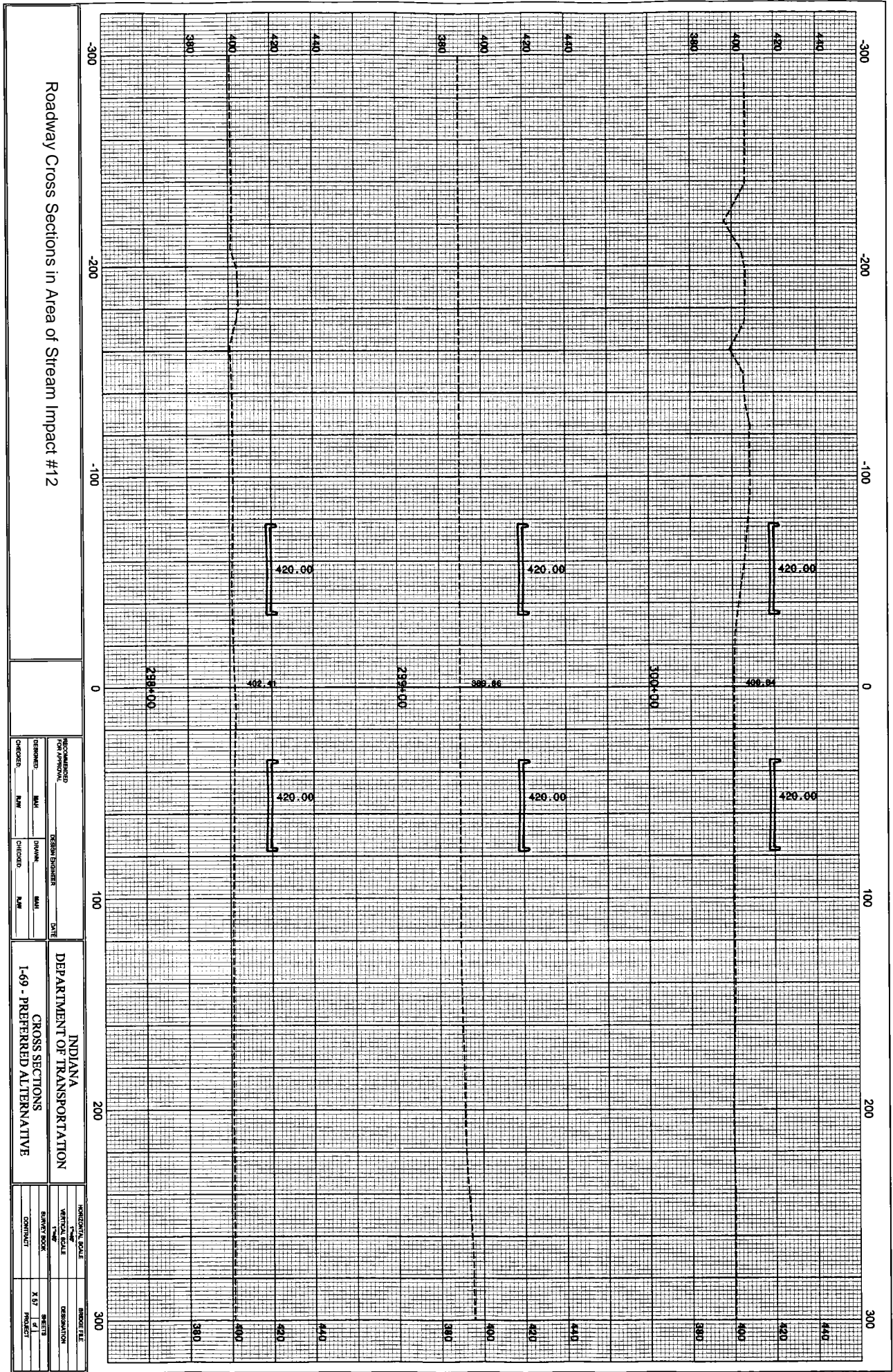
ROADWAY CROSS SECTIONS IN AREA OF STREAM IMPACT #11 AND WETLAND IMPACT #5			
DESIGNED BY: <u>MM</u>		CHECKED BY: <u>MM</u>	
DRAWN BY: <u>MM</u>		CHECKED BY: <u>MM</u>	
DATE: <u>    </u>		DATE: <u>    </u>	
INDIANA DEPARTMENT OF TRANSPORTATION			
CROSS SECTIONS			
I-69 - PREFERRED ALTERNATIVE			
HORIZONTAL SCALE: <u>1"=40'</u>		VERTICAL SCALE: <u>1"=10'</u>	
SHEET NO. <u>1</u>		SHEET NO. <u>1</u>	
PROJECT NO. <u>    </u>		PROJECT NO. <u>    </u>	





Roadway Cross Sections in Area of Stream Impact #12

DESIGNED FOR APPROVAL DESIGNED BY: <u>                    </u> DATE: <u>                    </u> CHECKED BY: <u>                    </u>		DESIGNED FOR APPROVAL DESIGNED BY: <u>                    </u> DATE: <u>                    </u> CHECKED BY: <u>                    </u>		INDIANA DEPARTMENT OF TRANSPORTATION CROSS SECTIONS I-69 - PREFERRED ALTERNATIVE		HORIZONTAL SCALE 1" = 40'		VERTICAL SCALE 1" = 10'		SHEET 1 OF 1	
--	--	--	--	---	--	------------------------------	--	----------------------------	--	-----------------	--



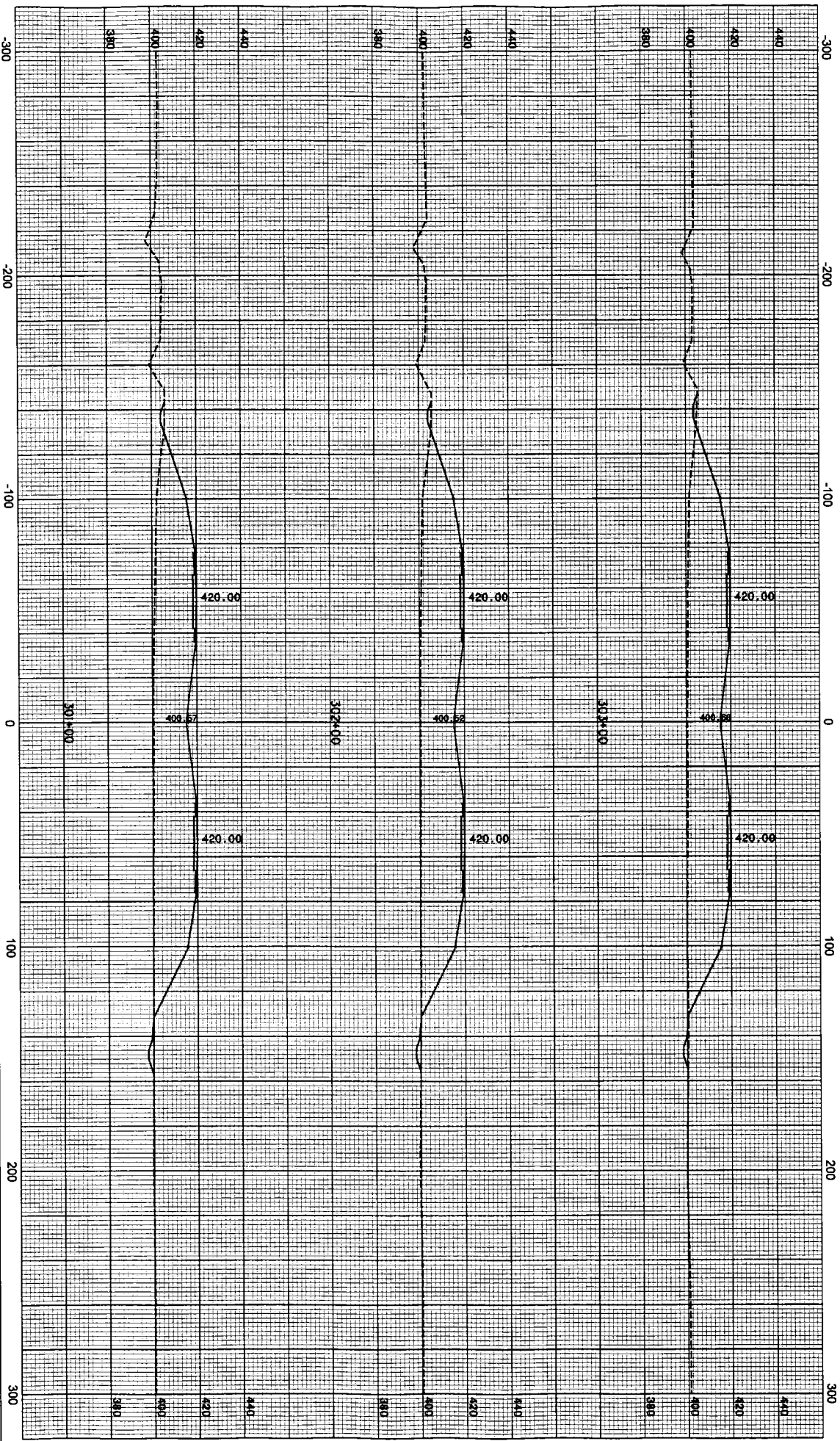
Roadway Cross Sections in Area of Stream Impact #12

RECOMMENDED FOR APPROVAL				DATE			
DESIGNED BY	BAH	DRAWN BY	BAH	CHECKED BY	BAH	DATE	
CHECKED BY	BAH	DRAWN BY	BAH	CHECKED BY	BAH	DATE	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE		SHEET NO.		SHEET TOTAL	
1" = 40'		1" = 4'		1		1	
CONTINUED		PROJECT		PROJECT		PROJECT	



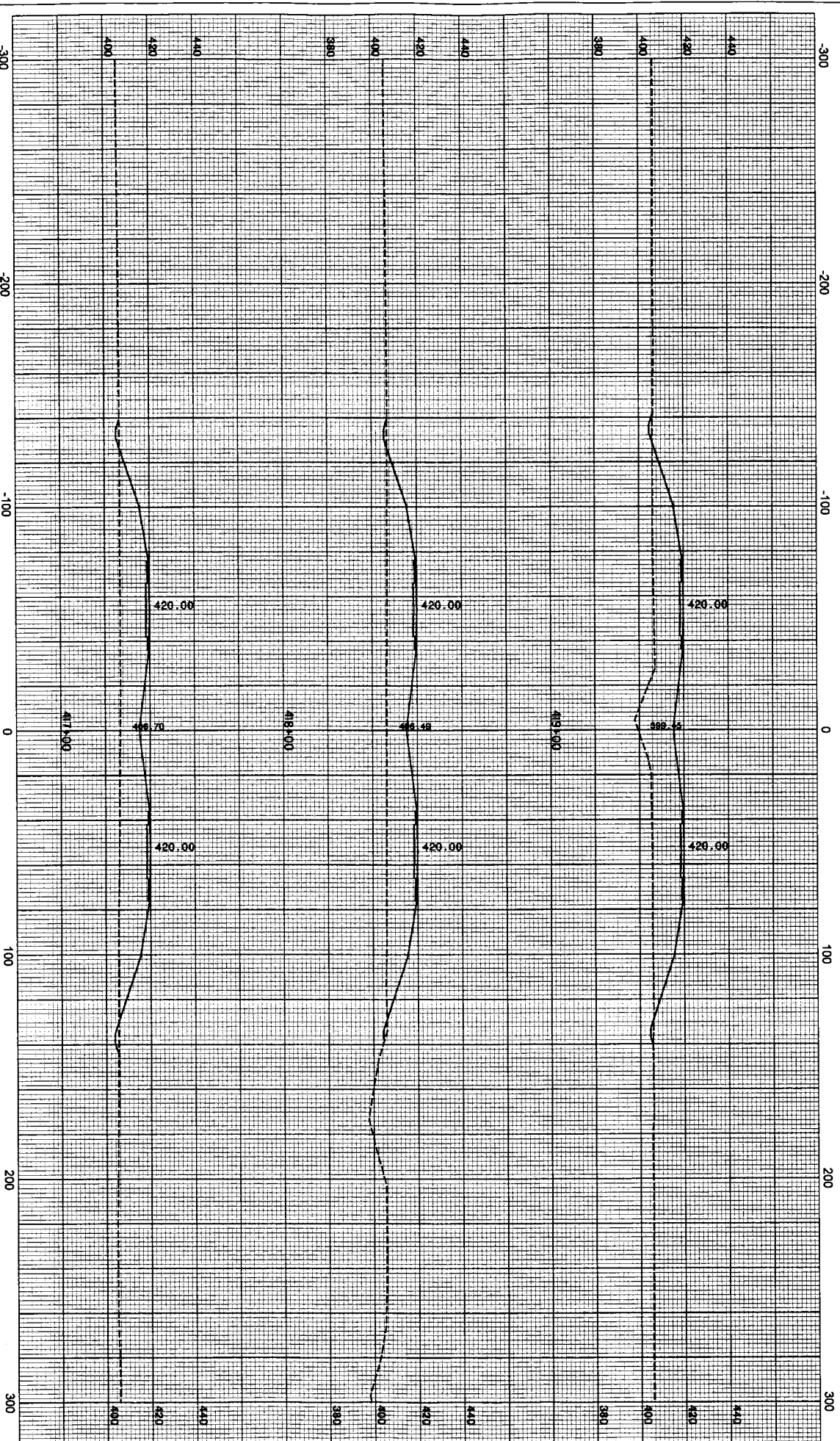


Roadway Cross Sections in Area of Stream Impact #12

DESIGNED FOR APPROVAL		DESIGN ENGINEER		DATE	
DESIGNED BY	MM	DESIGNED BY	MM	DATE	
CHECKED BY	MM	CHECKED BY	MM		

INDIANA DEPARTMENT OF TRANSPORTATION	
CROSS SECTIONS	
I-69 - PREFERRED ALTERNATIVE	

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 4'	
SHEET NO. 1		SHEET NO. 1	
CONTRACT		PROJECT	



Roadway Cross Sections in Area of Stream Impact #13

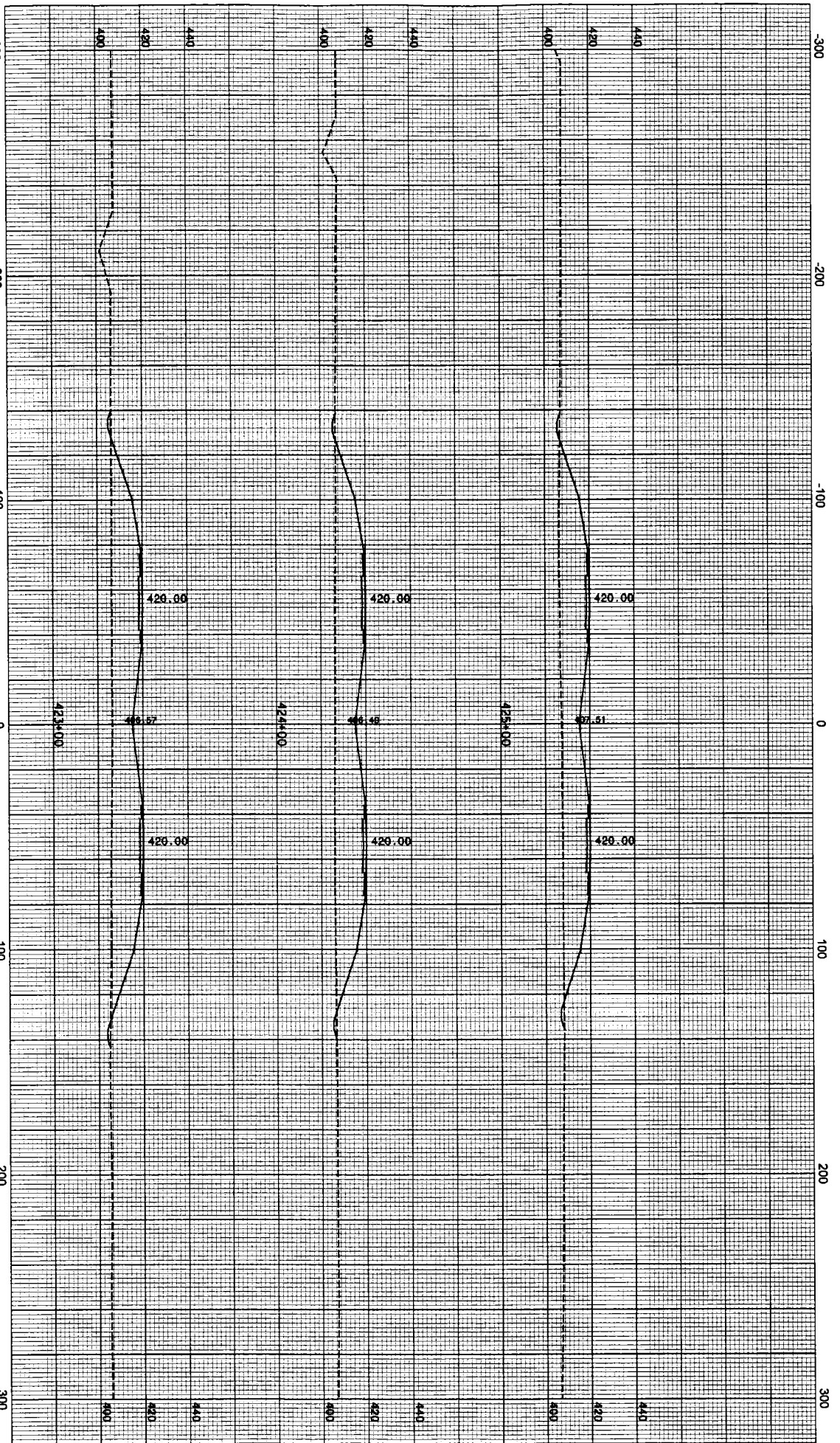
RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE
DRAWN BY	DATE	DRAWN BY	DATE	
CHECKED BY	DATE	CHECKED BY	DATE	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 4'	
SHEET NO.		SHEET NO.	
PROJECT		PROJECT	







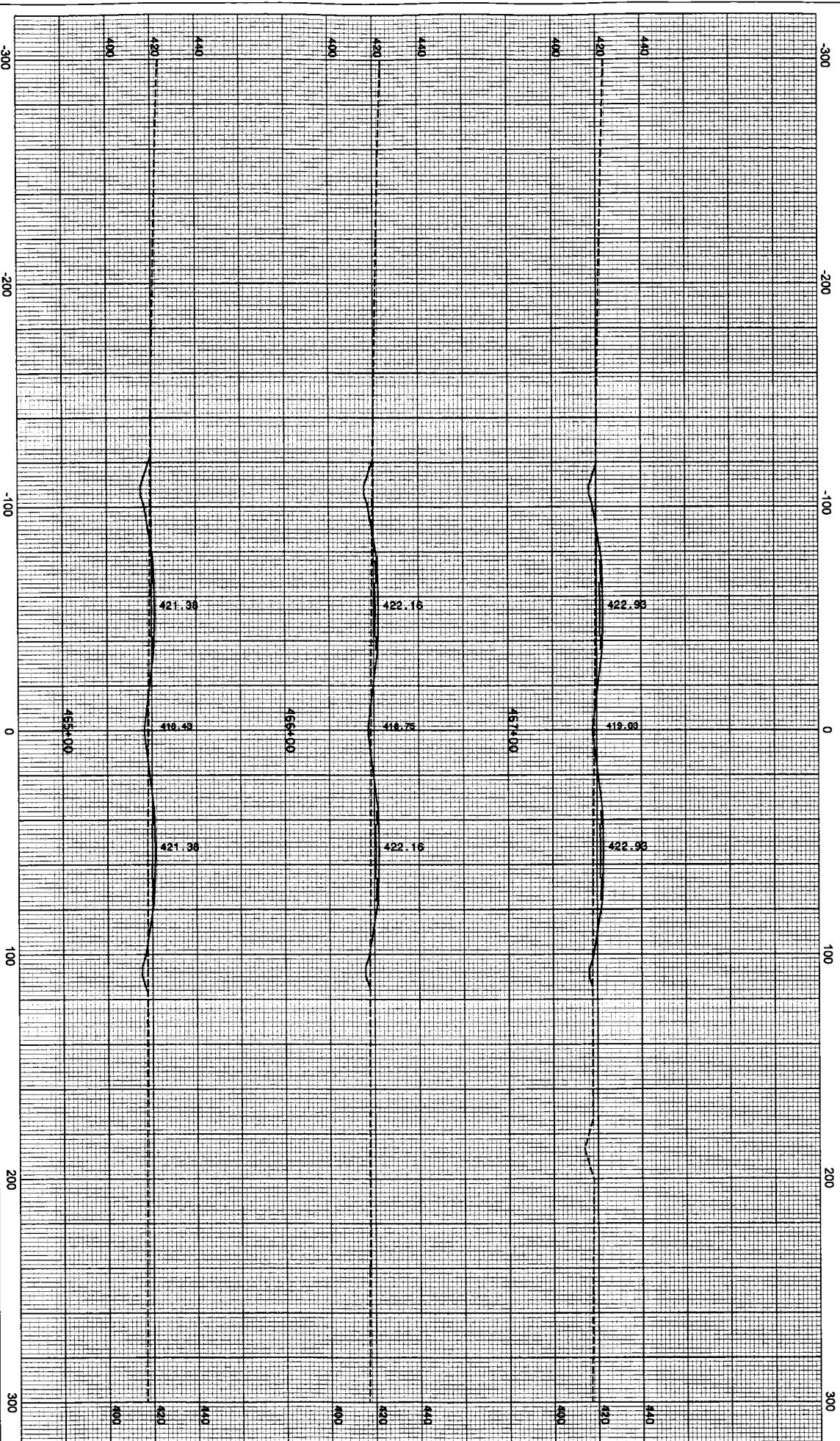
# Roadway Cross Sections in Area of Stream Impact #13

RECOMMENDED FOR APPROVAL		DESIGN REVIEWER		DATE
DRAWN	MM	DRAWN	MM	
CHECKED	MM	CHECKED	MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 4'	
SHEET NO.		SHEET NO.	
PROJECT		PROJECT	



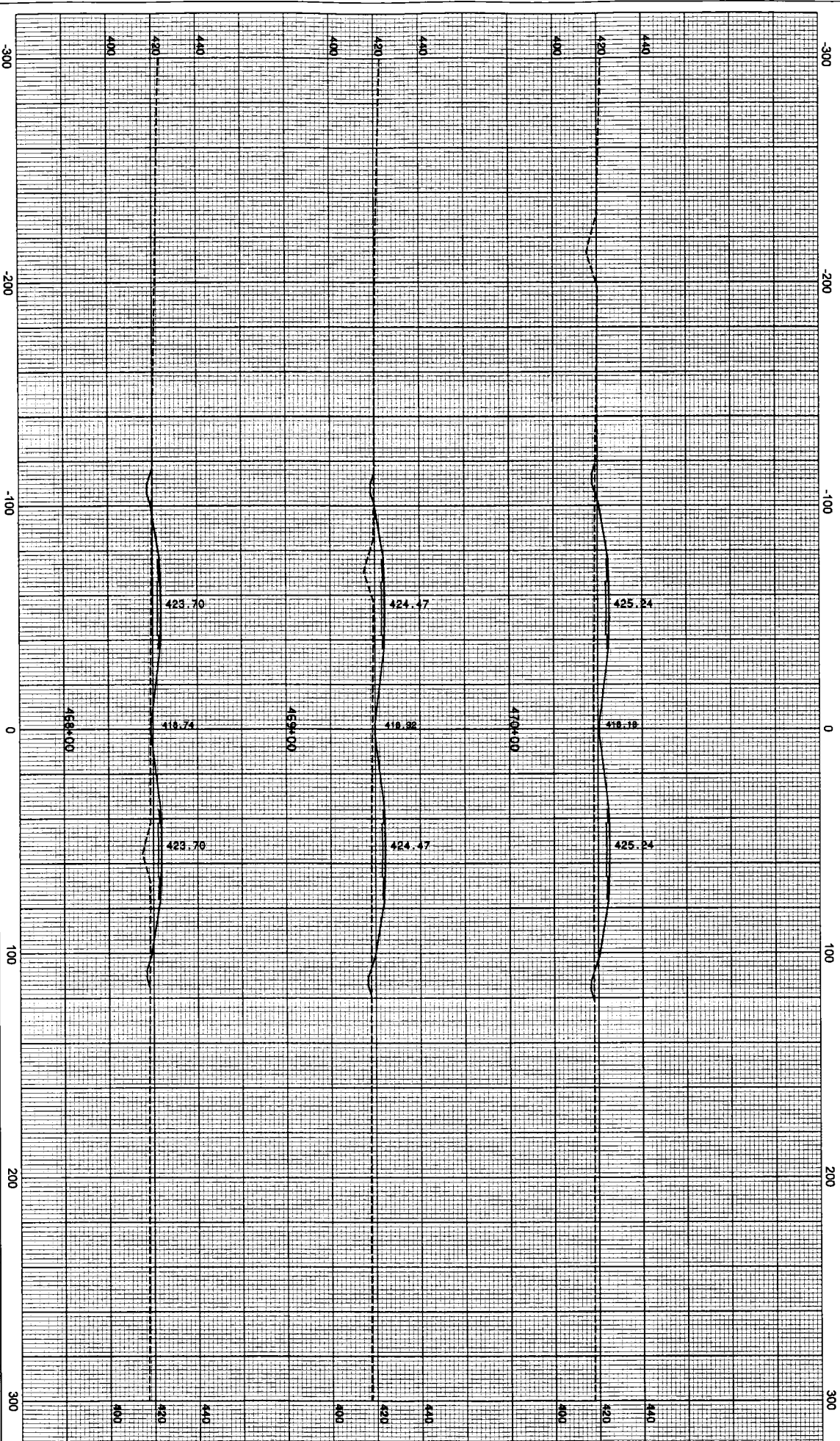


Roadway Cross Sections in Area of Stream Impact #14

DESIGNED BY		DATE	
DESIGNED	MM	DATE	MM
CHECKED	MM	CHECKED	MM

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 10'	
SHEET NO.		SHEET NO.	
PROJECT		PROJECT	



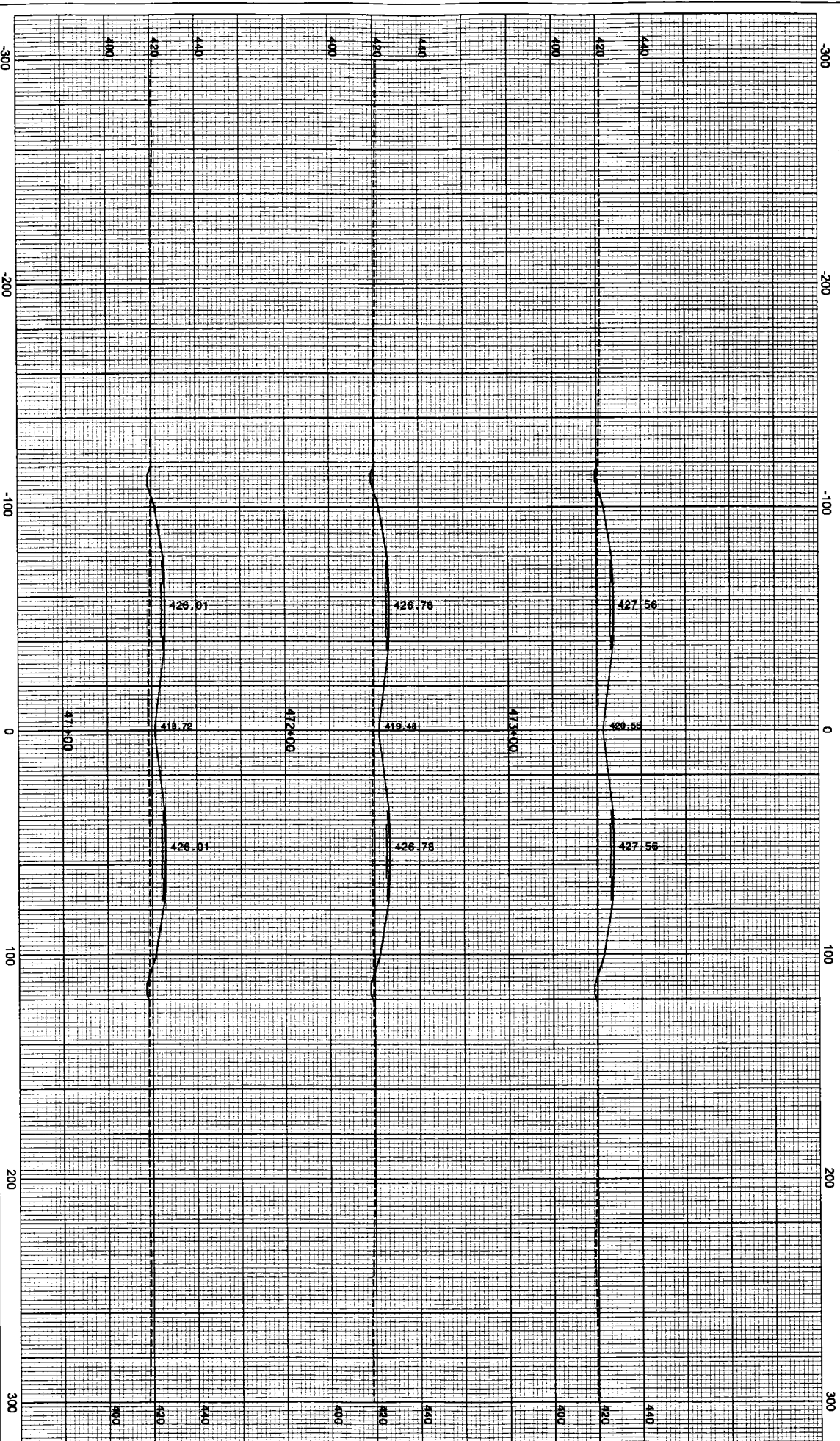
# Roadway Cross Sections in Area of Stream Impact #14

RECOMMENDED FOR APPROVAL			
DESIGNED BY	DATE	DESIGN ENGINEER	DATE
CHECKED BY		CHECKED BY	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
PLAN	SECTION	PLAN	SECTION
1" = 40'	1" = 40'	1" = 40'	1" = 40'
DATE	PROJECT	DATE	PROJECT



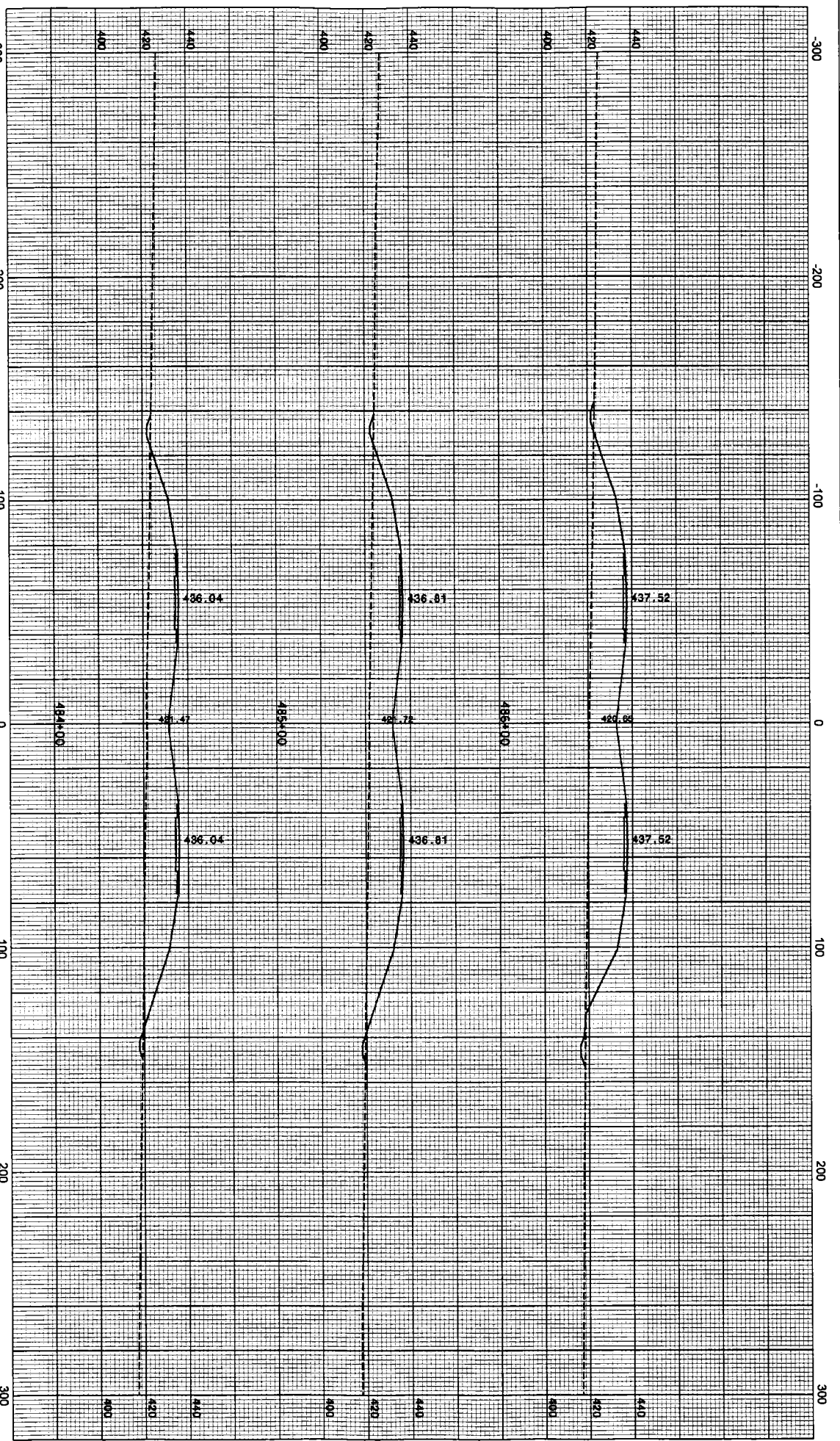


# Roadway Cross Sections in Area of Stream Impact #14

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE
DRAWN BY	MM	DRAWN BY	MM	
CHECKED BY	MM	CHECKED BY	MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 10'	
SHEET NO.		SHEET NO.	
PROJECT		PROJECT	



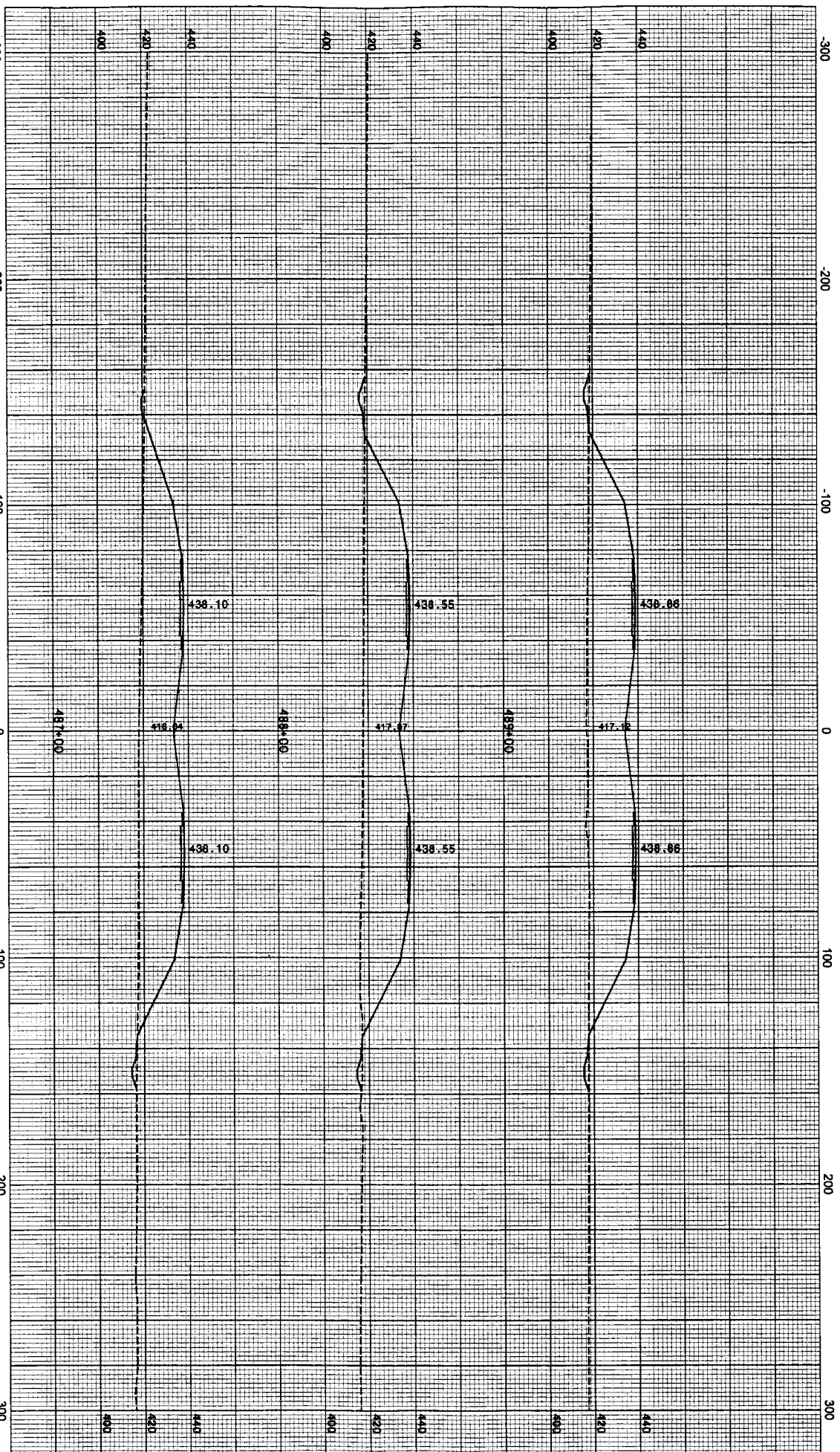
# Roadway Cross Sections in Area of Stream Impact #15

RECOMMENDED FOR APPROVAL _____ DATE _____		DESIGN ENGINEER _____ DATE _____	
DESIGNED BY _____	BY _____	DRAWN BY _____	BY _____
CHECKED BY _____	BY _____	CHECKED BY _____	BY _____

INDIANA DEPARTMENT OF TRANSPORTATION CROSS SECTIONS I-69 - PREFERRED ALTERNATIVE		HORIZONTAL SCALE _____ VERTICAL SCALE _____ SHEET NO. _____ CONTRACT _____ PROJECT _____	
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Roadway Cross Sections in Area of Stream Impact #15

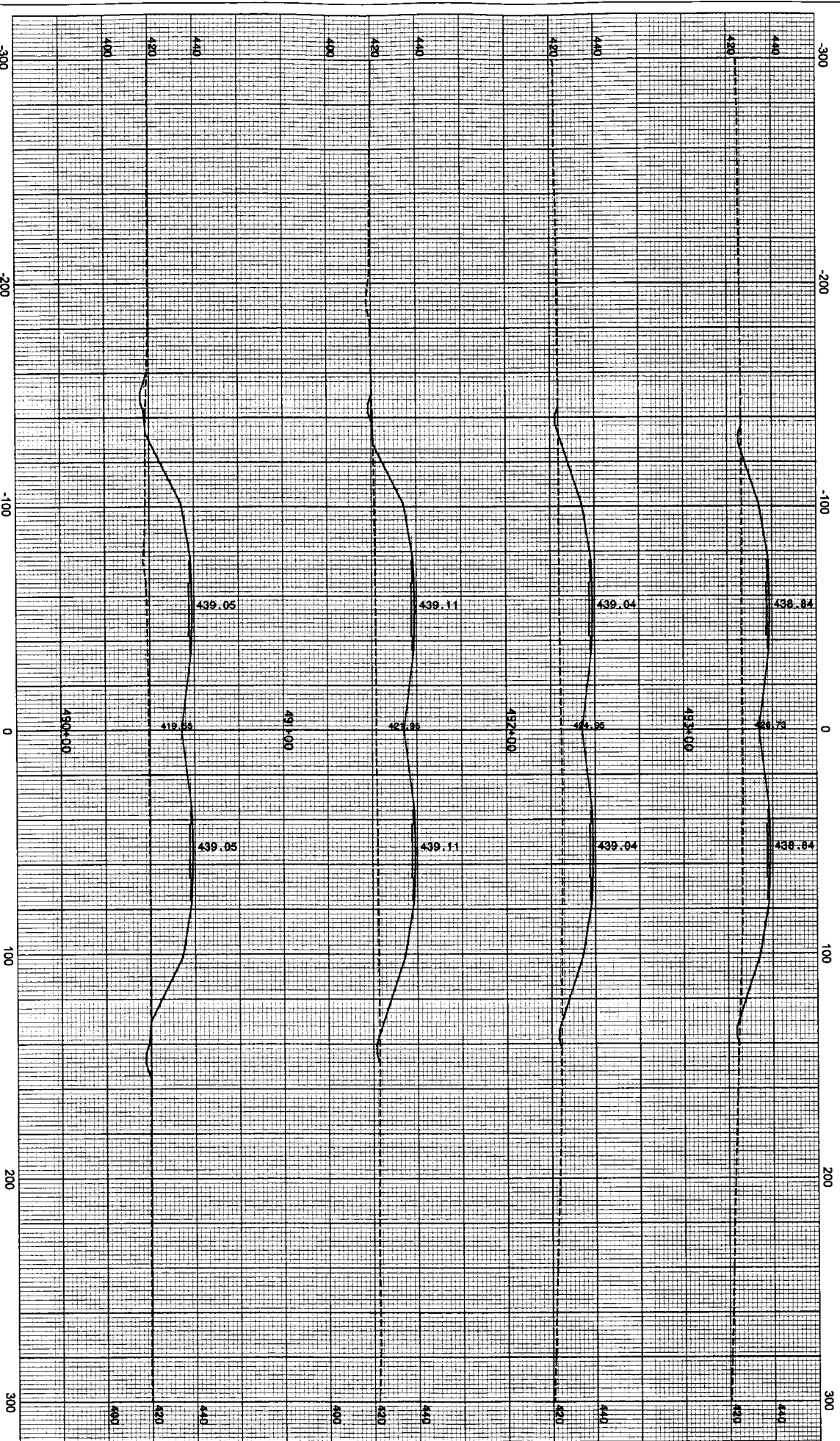
RECOMMENDED FOR APPROVAL		DESIGN NUMBER		DATE	
DRAWN BY	CHKD BY	DRAWN BY	CHKD BY	DRAWN BY	CHKD BY
DATE	DATE	DATE	DATE	DATE	DATE

INDIANA DEPARTMENT OF TRANSPORTATION

CROSS SECTIONS

I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 100'	1" = 10'	1" = 100'	1" = 10'
SHEET NO.		SHEET NO.	
1 OF 1		1 OF 1	
PROJECT		PROJECT	



Roadway Cross Sections in Area of Stream Impact #15

DESIGNED BY: <u>                    </u>		DRAWN BY: <u>                    </u>		CHECKED BY: <u>                    </u>		DATE: <u>                    </u>	
ORDERED BY: <u>                    </u>		NAME: <u>                    </u>		NAME: <u>                    </u>		NAME: <u>                    </u>	

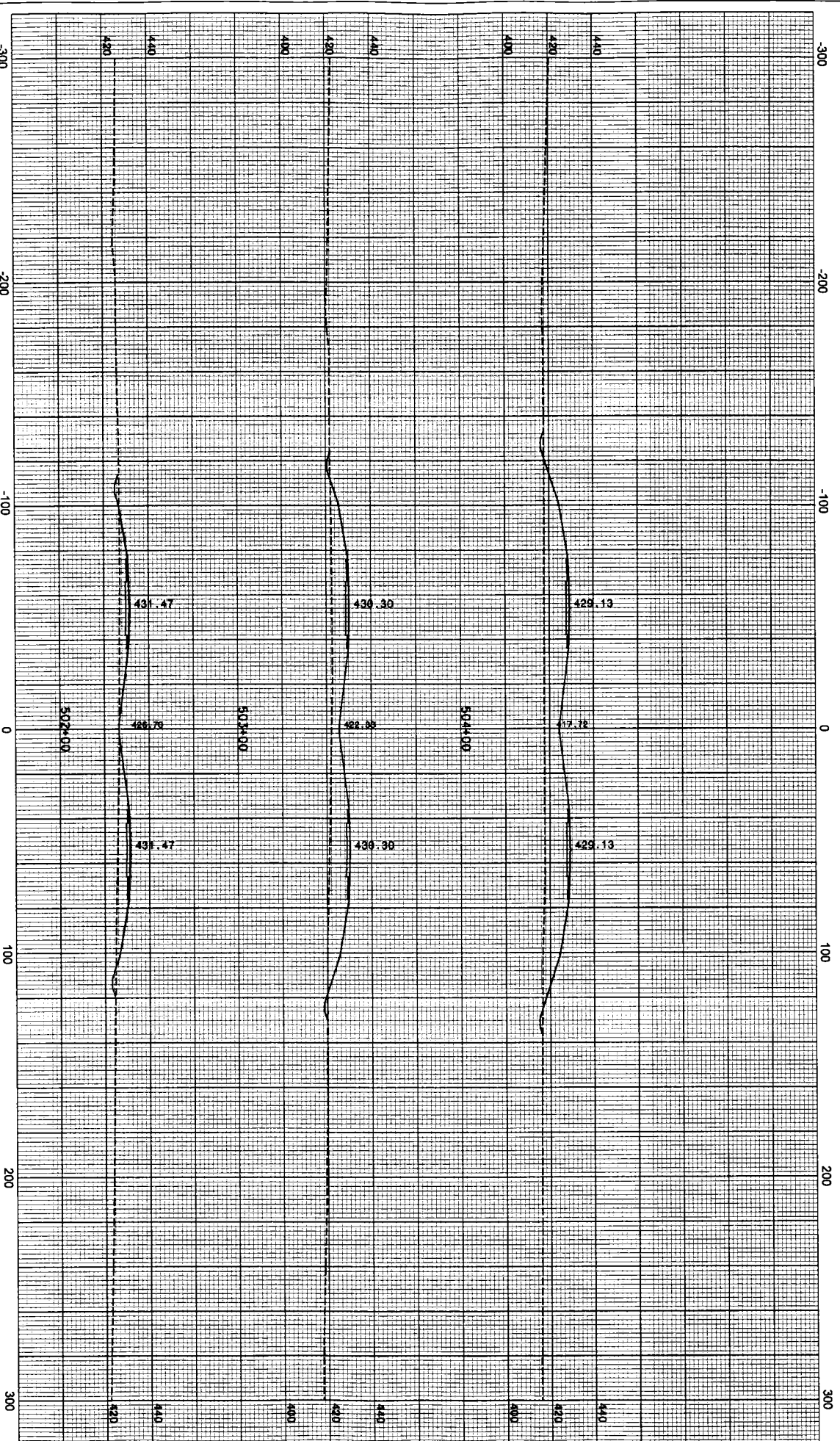
  

INDIANA DEPARTMENT OF TRANSPORTATION			
CROSS SECTIONS			
I-69 - PREFERRED ALTERNATIVE			

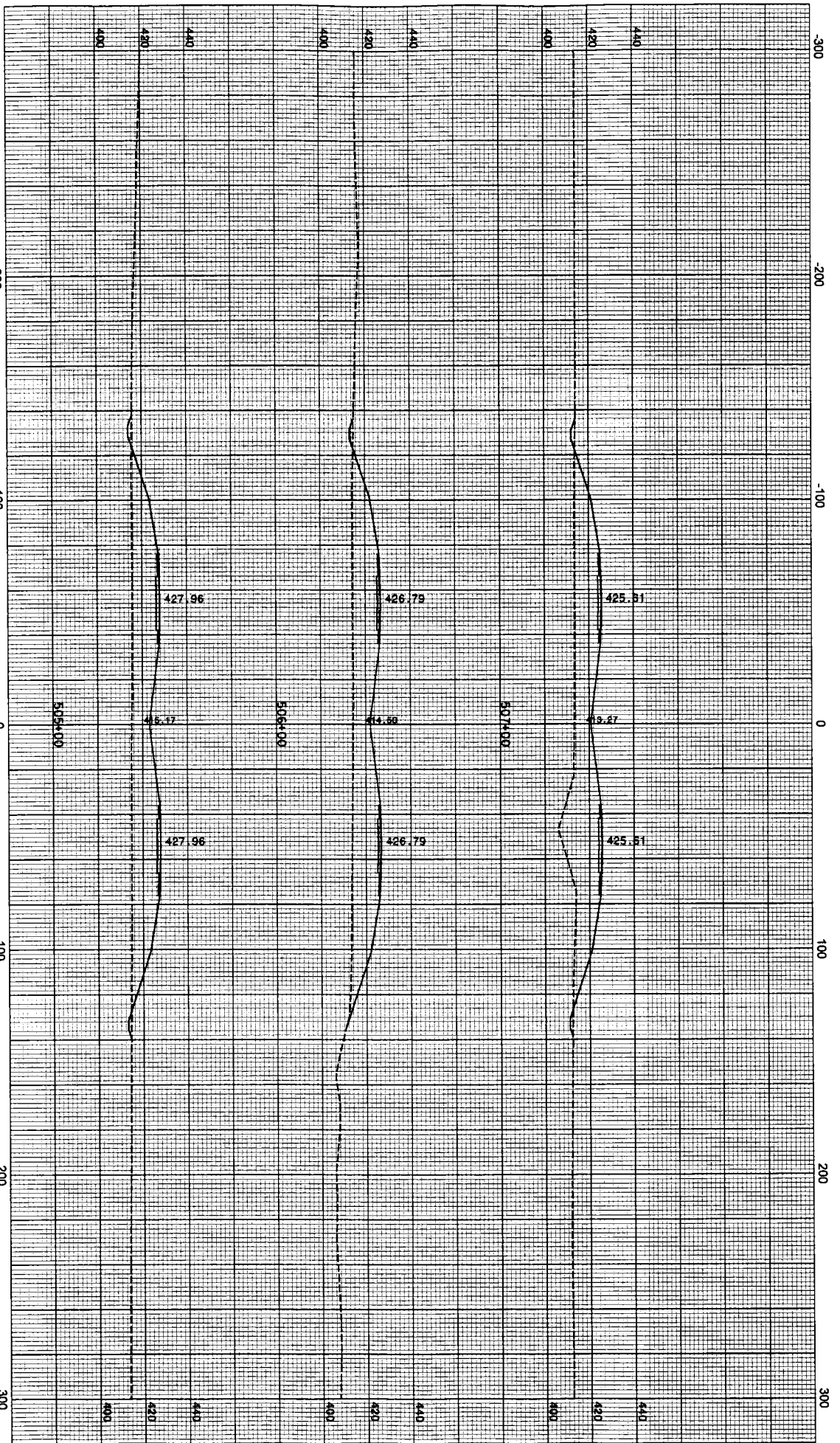
HORIZONTAL SCALE		VERTICAL SCALE	
1" = 100'		1" = 10'	
SHEET NO. <u>                    </u>		SHEET NO. <u>                    </u>	
PROJECT NO. <u>                    </u>		PROJECT NO. <u>                    </u>	





Roadway Cross Sections in Area of Stream Impact #16 and #17

RECOMMENDED FOR APPROVAL DESIGNED BY: <u>                    </u> DATE: <u>                    </u> DRAWN BY: <u>                    </u> CHECKED BY: <u>                    </u>		INDIANA DEPARTMENT OF TRANSPORTATION CROSS SECTIONS I-69 - PREFERRED ALTERNATIVE		HORIZONTAL SCALE: <u>1" = 40'</u> VERTICAL SCALE: <u>1" = 10'</u> SHEET NO.: <u>                    </u> OF <u>                    </u> PROJECT: <u>                    </u>	
--	--	--	--	--	--



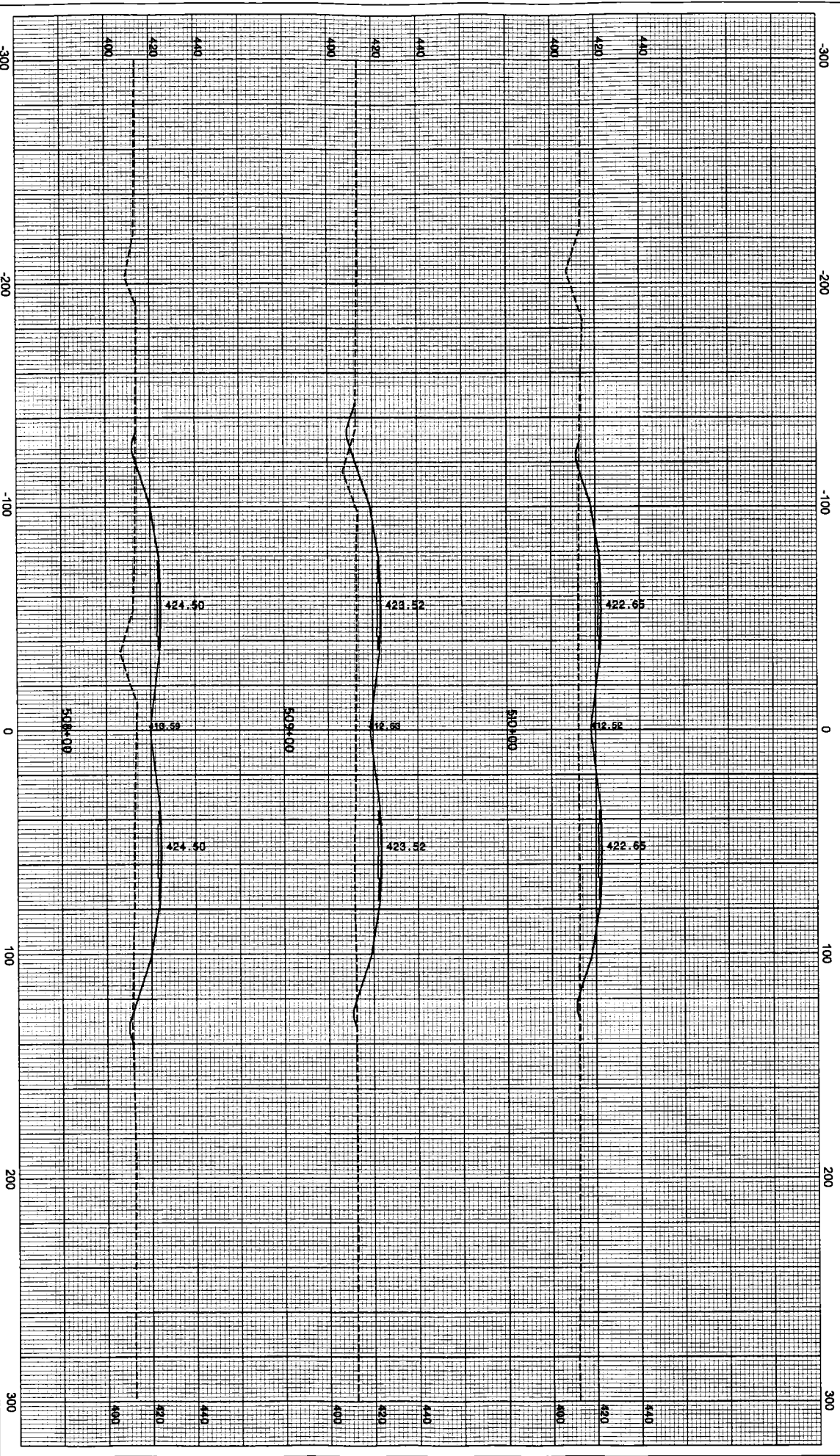
Roadway Cross Sections in Area of Stream Impact #16 and #17

DESIGNER'S NAME		DATE	
DESIGNED BY	MAH	DRAWN BY	MAH
CHECKED BY	MAH	CHECKED BY	MAH

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
1-69 - PREFERRED ALTERNATIVE

PROJECT INFORMATION		DRAWING INFORMATION	
ROUTE	1-69	SHEET	1
CONTRACT		PROJECT	



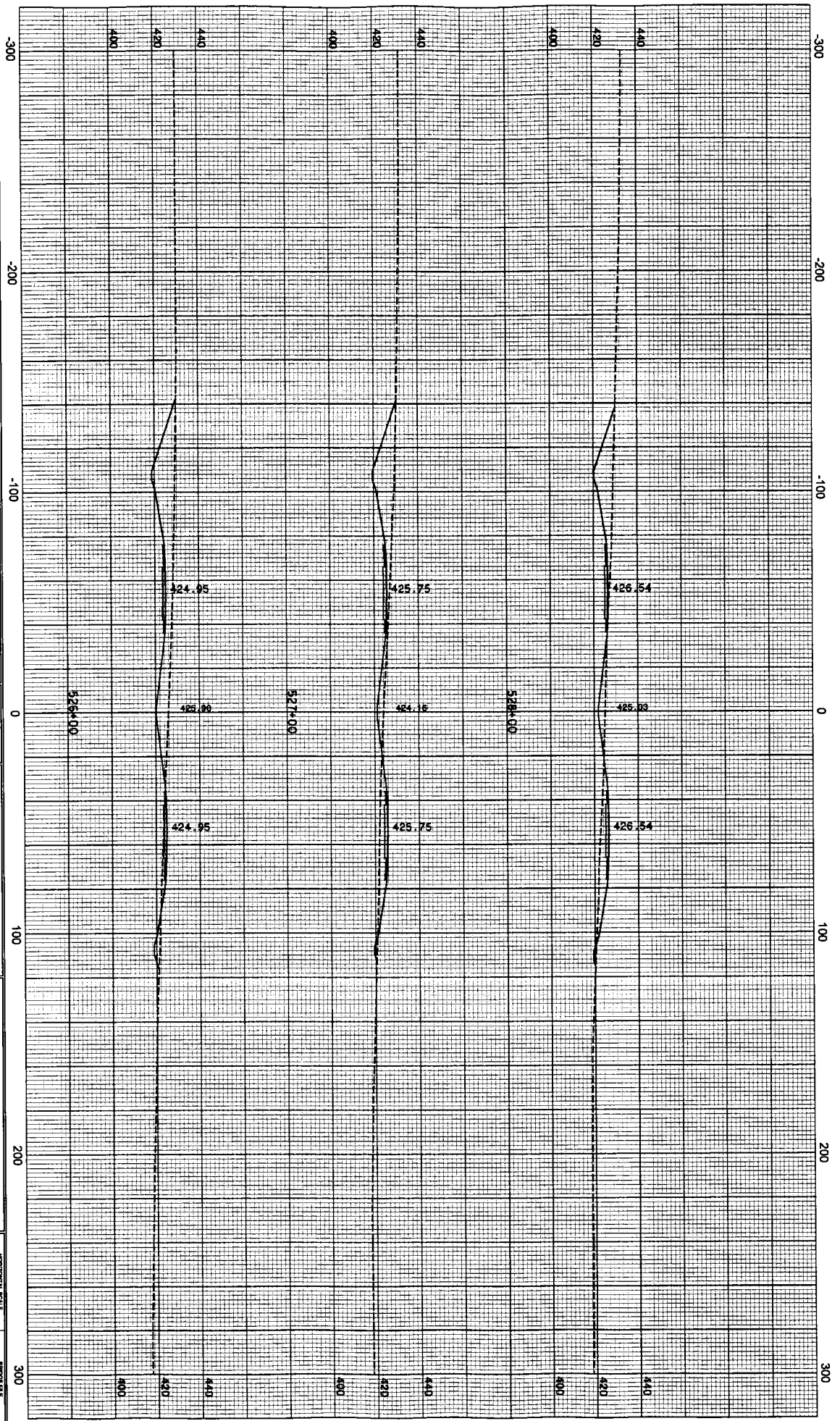


Roadway Cross Sections in Area of Stream Impact #16 and #17

DESIGNED BY: <u>MMH</u>		DRAWN BY: <u>MMH</u>		DATE: <u>      </u>	
CHECKED BY: <u>MMH</u>		CHECKED BY: <u>MMH</u>			

INDIANA DEPARTMENT OF TRANSPORTATION		HORIZONTAL SCALE: <u>1" = 50'</u>		VERTICAL SCALE: <u>1" = 5'</u>	
CROSS SECTIONS		SHEET NO. <u>1</u>		SHEET TOTAL <u>1</u>	
1-69 - PREFERRED ALTERNATIVE		CONTRACT NO. <u>      </u>		PROJECT NO. <u>      </u>	



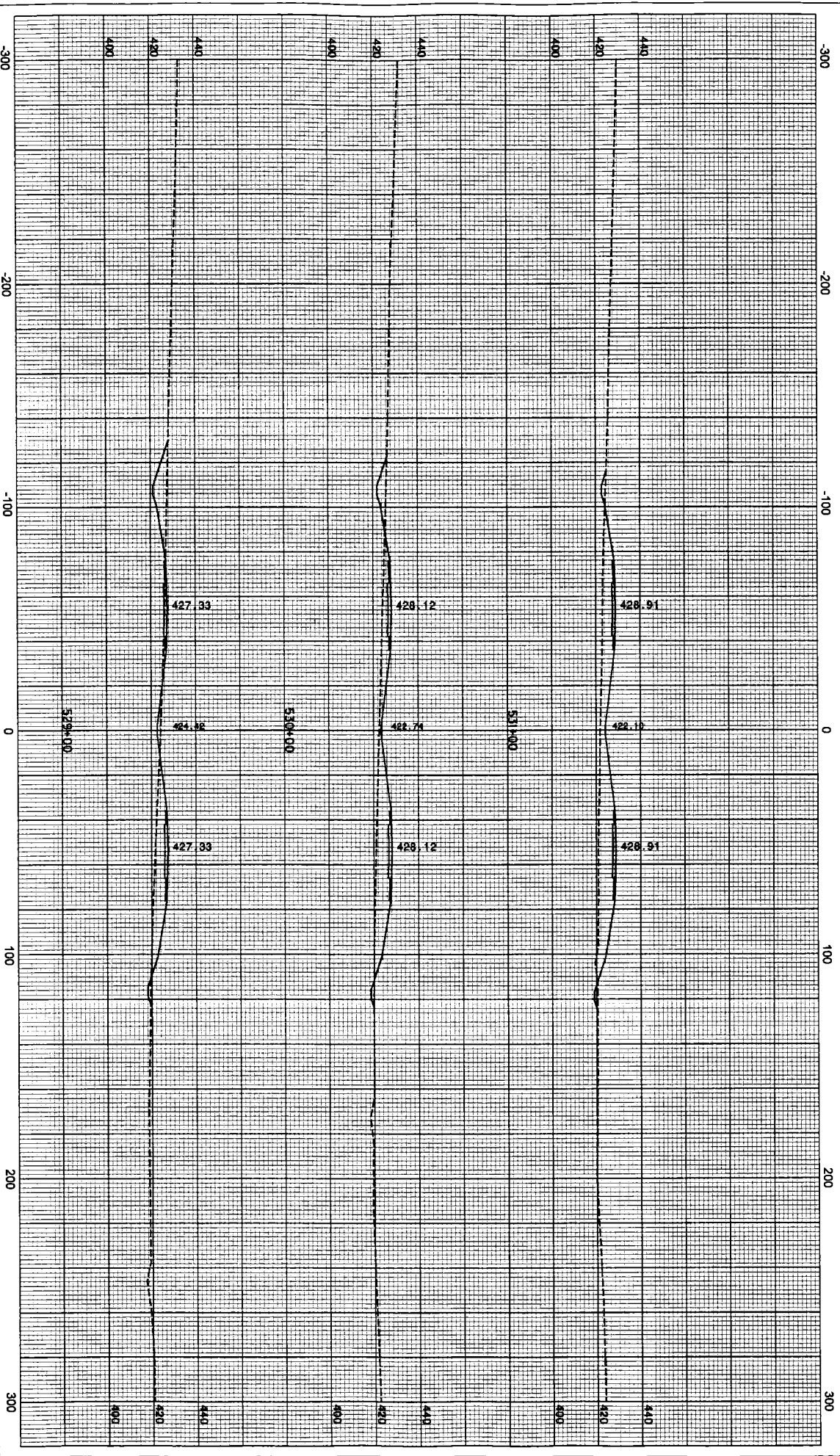
Roadway Cross Sections in Area of Stream Impact #18 and #19

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE
DESIGNED	BY	DRAWN	BY	
CHECKED	BY	CHECKED	BY	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE	VERTICAL SCALE	PROJECT
1"=40'	1"=4'	
SHEET NO.	SHEET TOTAL	



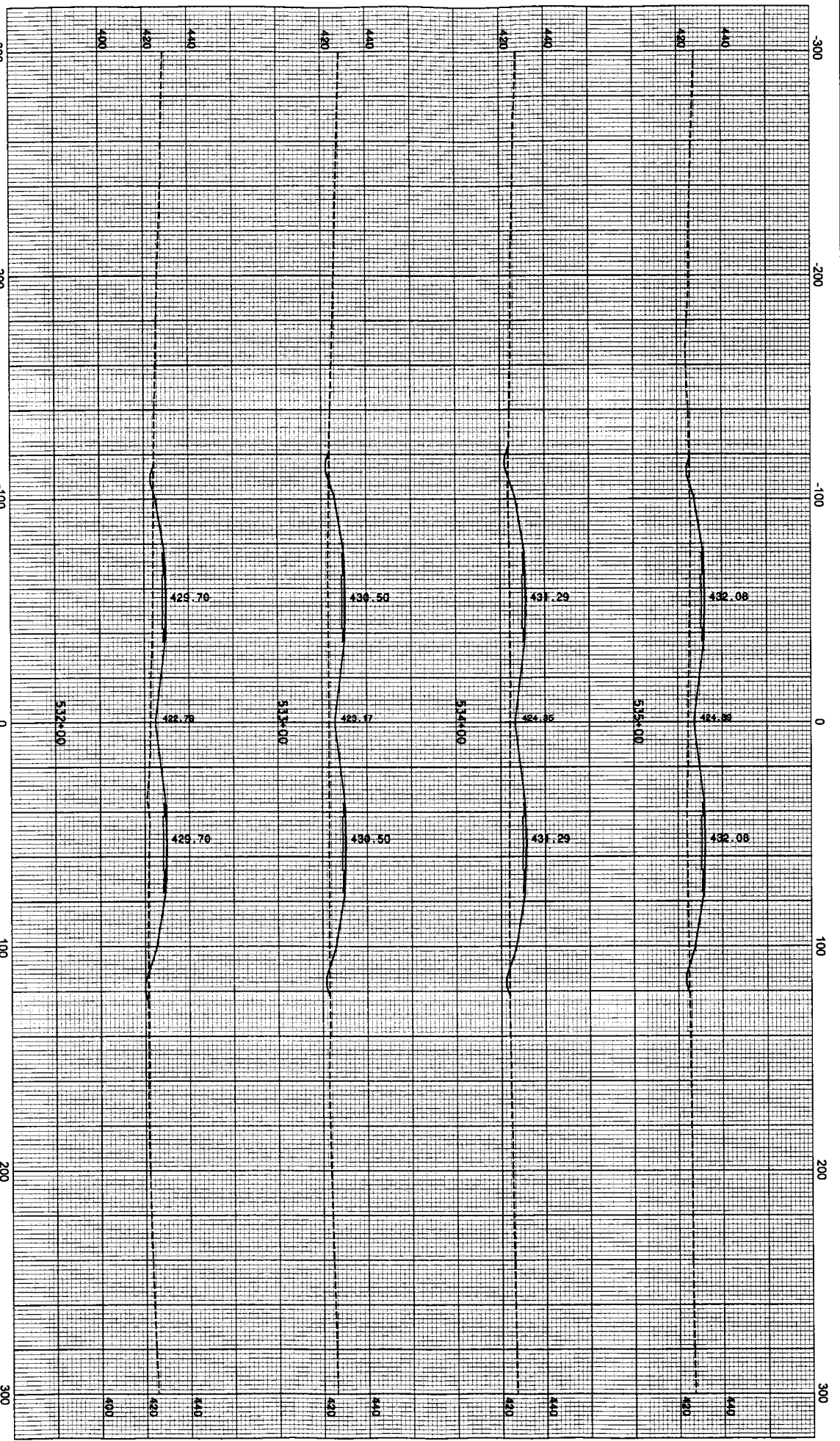


# Roadway Cross Sections in Area of Stream Impact #18 and #19

DESIGNED FOR APPROVAL		DESIGN ENGINEER		DATE
DESIGNED BY	MM	DRAWN BY	MM	
CHECKED BY	MM	CHECKED BY	MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 4'	
SHEET NO.	1	PROJECT NO.	
CONTRACT NO.		SECTION NO.	



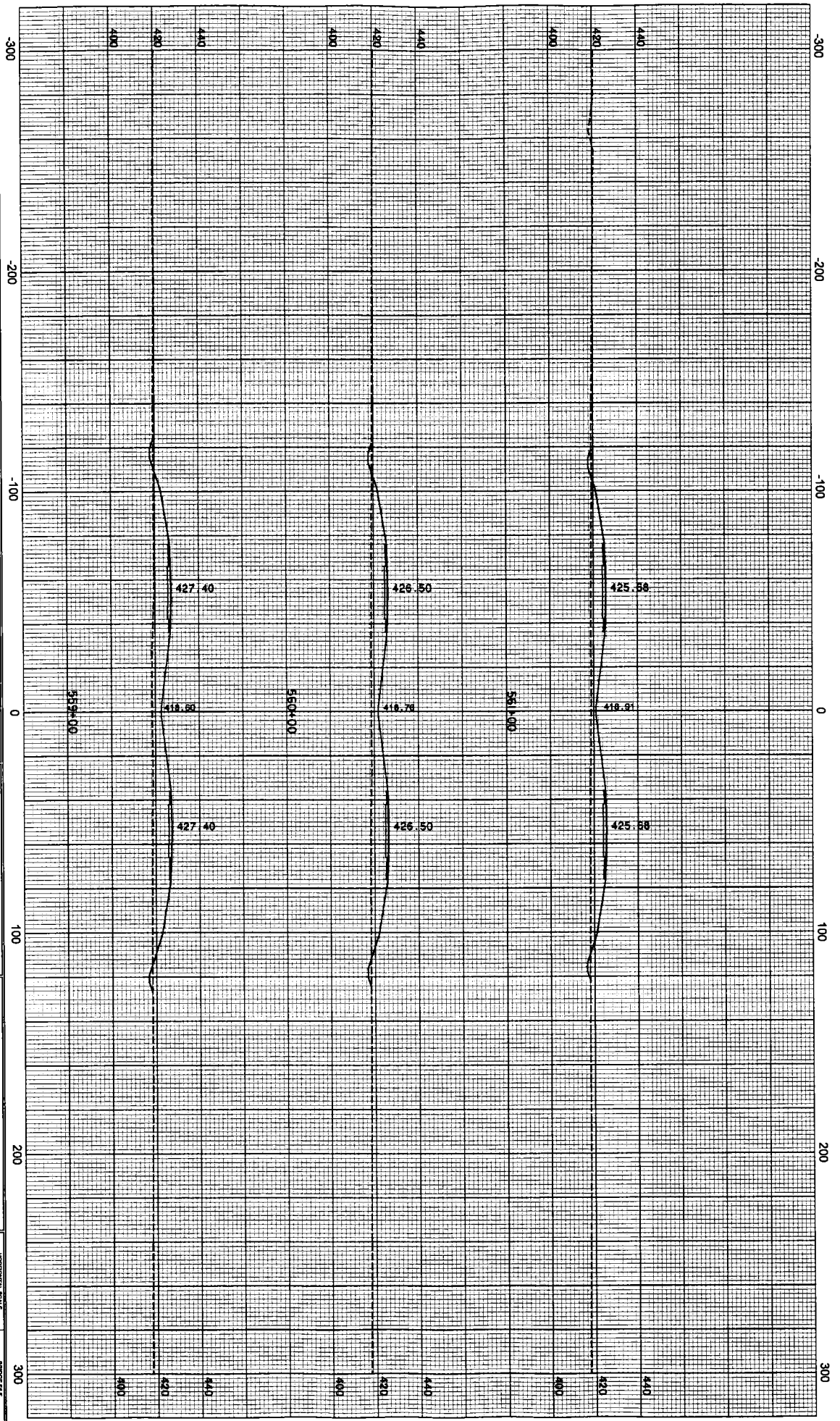
Roadway Cross Sections in Area of Stream Impact #18 and #19

RECOMMENDED FOR APPROVAL			
DESIGNED BY	DATE	DESIGN NUMBER	DATE
CHECKED BY	DATE	DESIGNED BY	DATE
APPROVED BY	DATE	DESIGNED BY	DATE

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'	1" = 40'	1" = 40'	1" = 40'
1" = 40'	1" = 40'	1" = 40'	1" = 40'
1" = 40'	1" = 40'	1" = 40'	1" = 40'



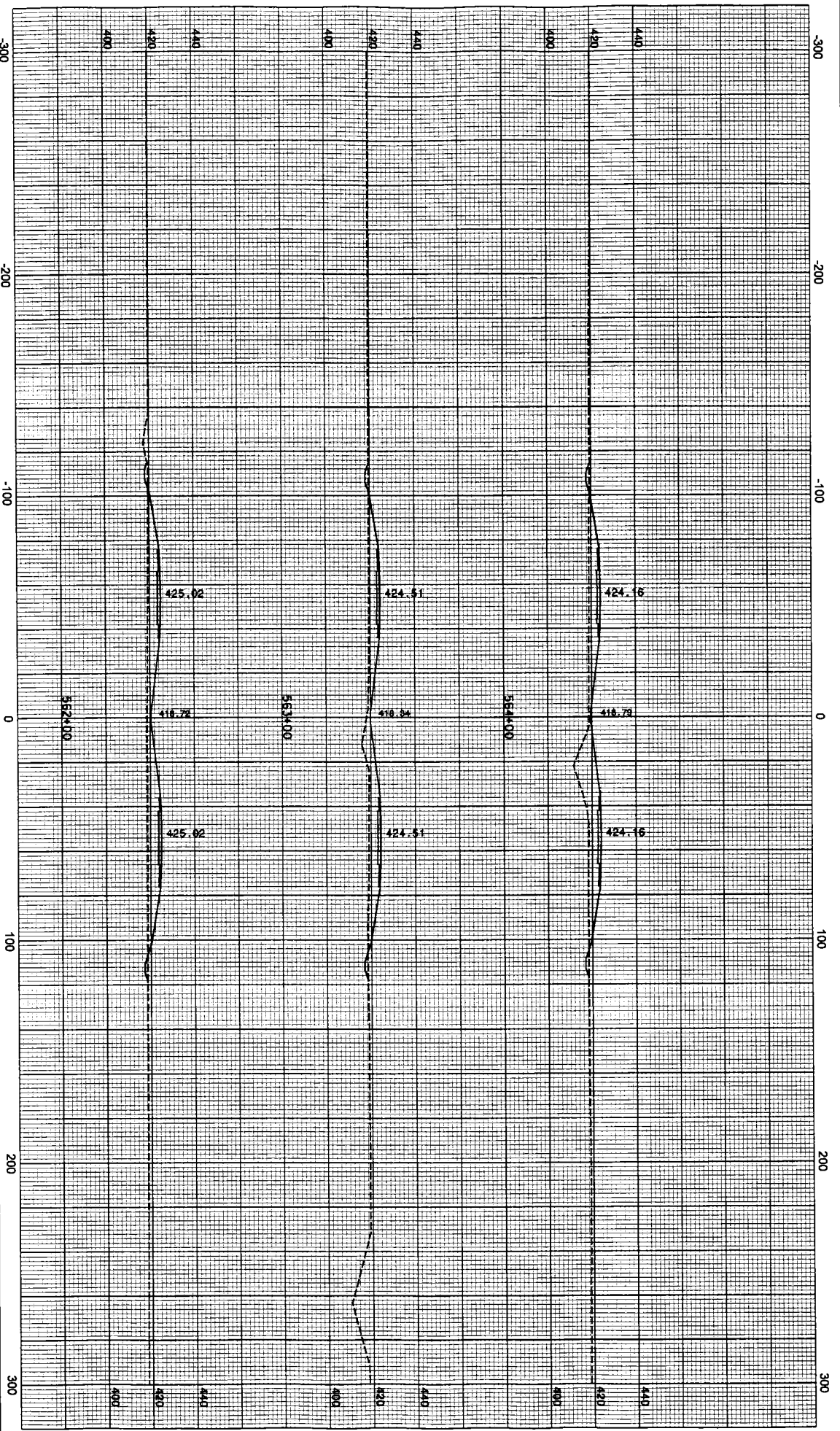


Roadway Cross Sections in Area of Stream Impact #20, #21, #22, and #23

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE
DRAWN BY	MM	CHECKED BY	MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE	VERTICAL SCALE	DESIGNATION
1" = 40'	1" = 10'	SHEET NO.
CONTRACT		PROJECT



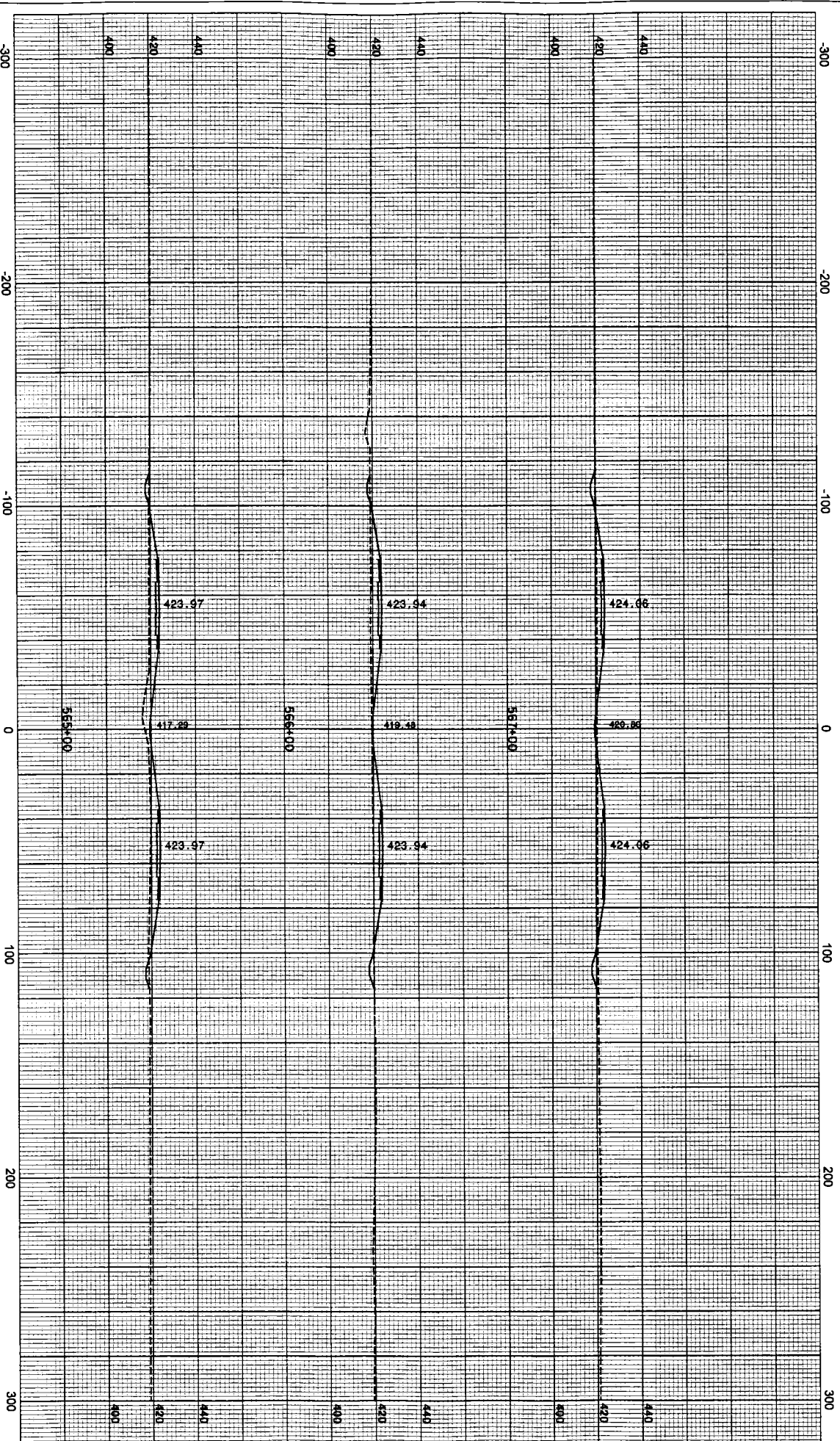
Roadway Cross Sections in Area of Stream Impact #20, #21, #22, and #23

RECOMMENDED FOR APPROVAL			
DESIGNED BY	DATE	DESIGN ENGINEER	DATE
DRAWN BY		DRAWN BY	
CHECKED BY		CHECKED BY	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

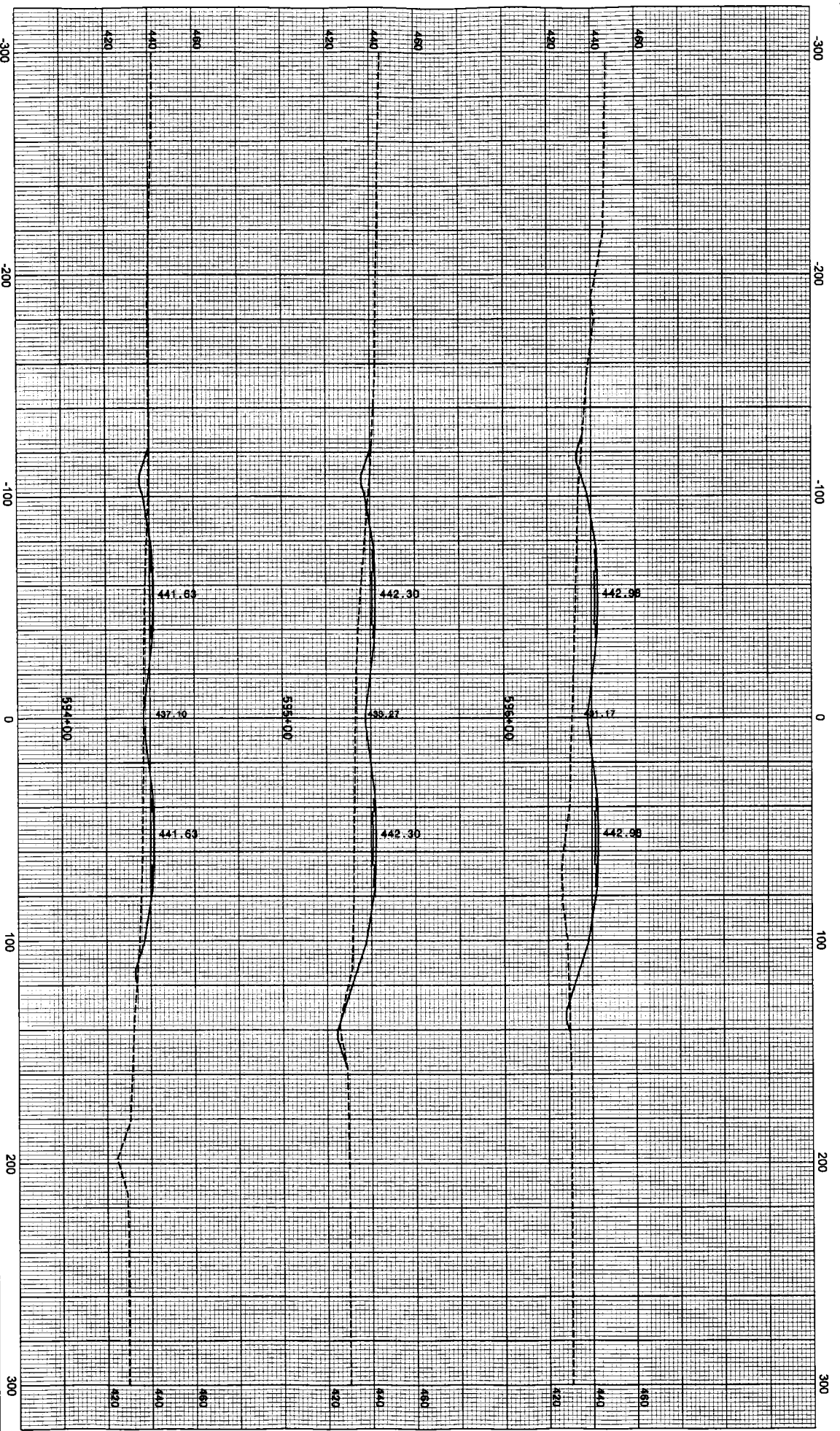
HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 4'	
SHEET NO.		SHEET NO.	
CONTRACT		CONTRACT	
PROJECT		PROJECT	





Roadway Cross Sections in Area of Stream Impact #20, #21, #22, and #23

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE	
DESIGNED	MM	DRAWN	MM		
CHECKED	MM	CHECKED	MM		
INDIANA DEPARTMENT OF TRANSPORTATION					
CROSS SECTIONS					
I-69 - PREFERRED ALTERNATIVE					
HORIZONTAL SCALE			VERTICAL SCALE		
SHEET NO.			SHEET NO.		
PROJECT			PROJECT		



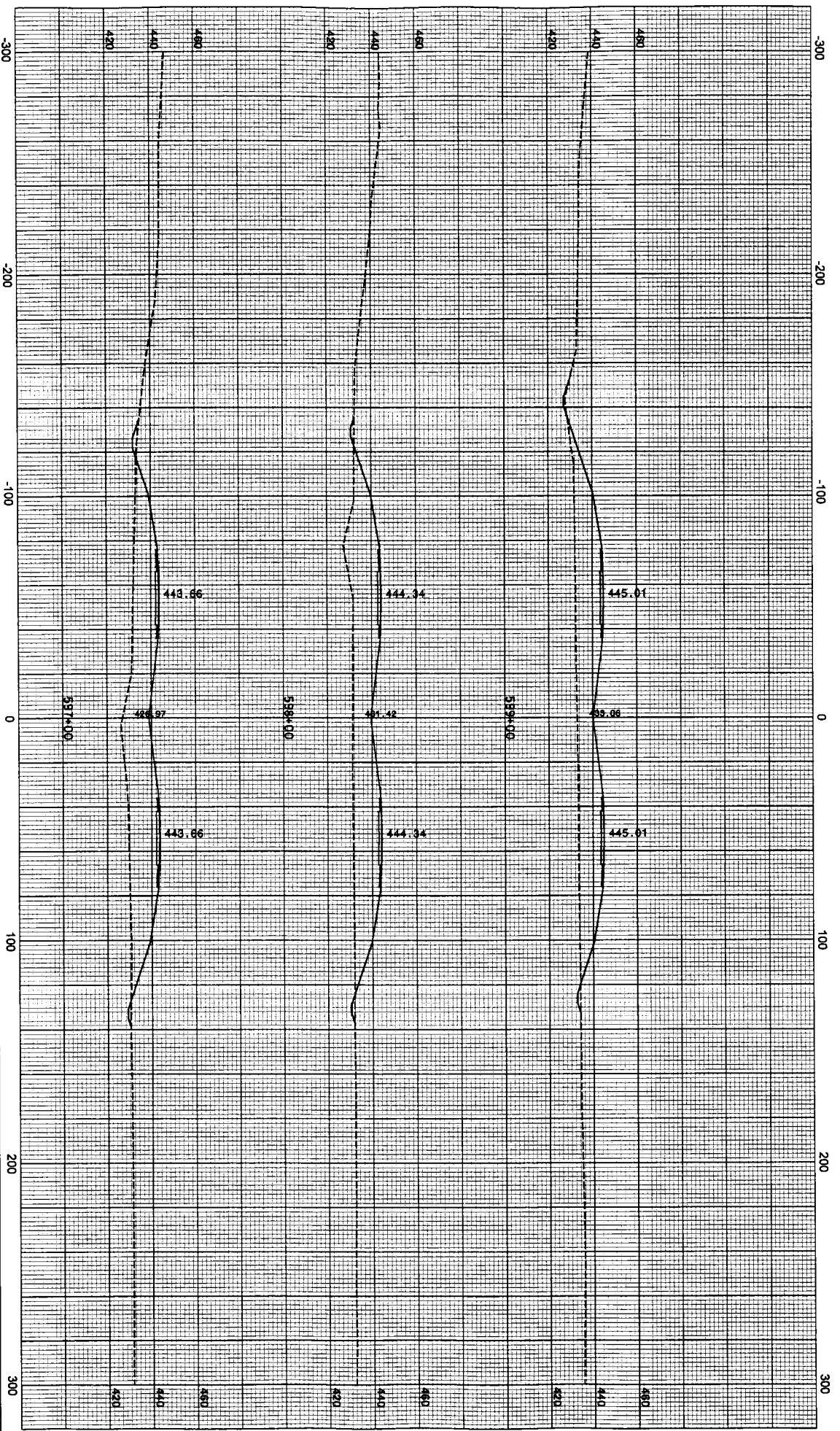
# Roadway Cross Sections in Area of Stream Impact #24

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE
DRAWN BY	MM	DRAWN BY	MM	
CHECKED BY	MM	CHECKED BY	MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 4'	
BLANK BOOK		BLANK BOOK	
CONTRACT		CONTRACT	
PROJECT		PROJECT	



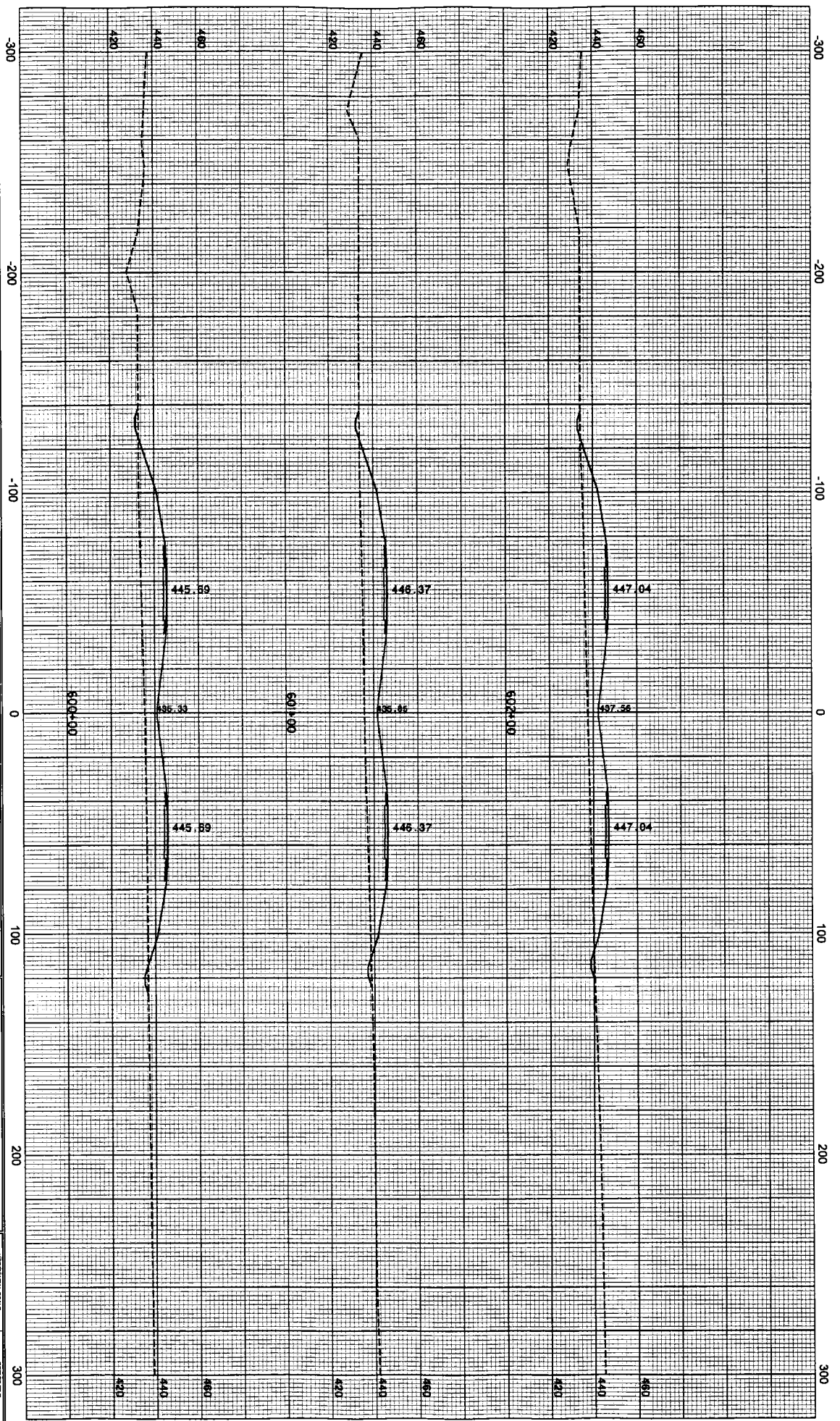


# Roadway Cross Sections in Area of Stream Impact #24

DESIGNED BY	DATE
CHECKED BY	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE	VERTICAL SCALE
1"=40'	1"=10'
BY	DATE
CHECKED	

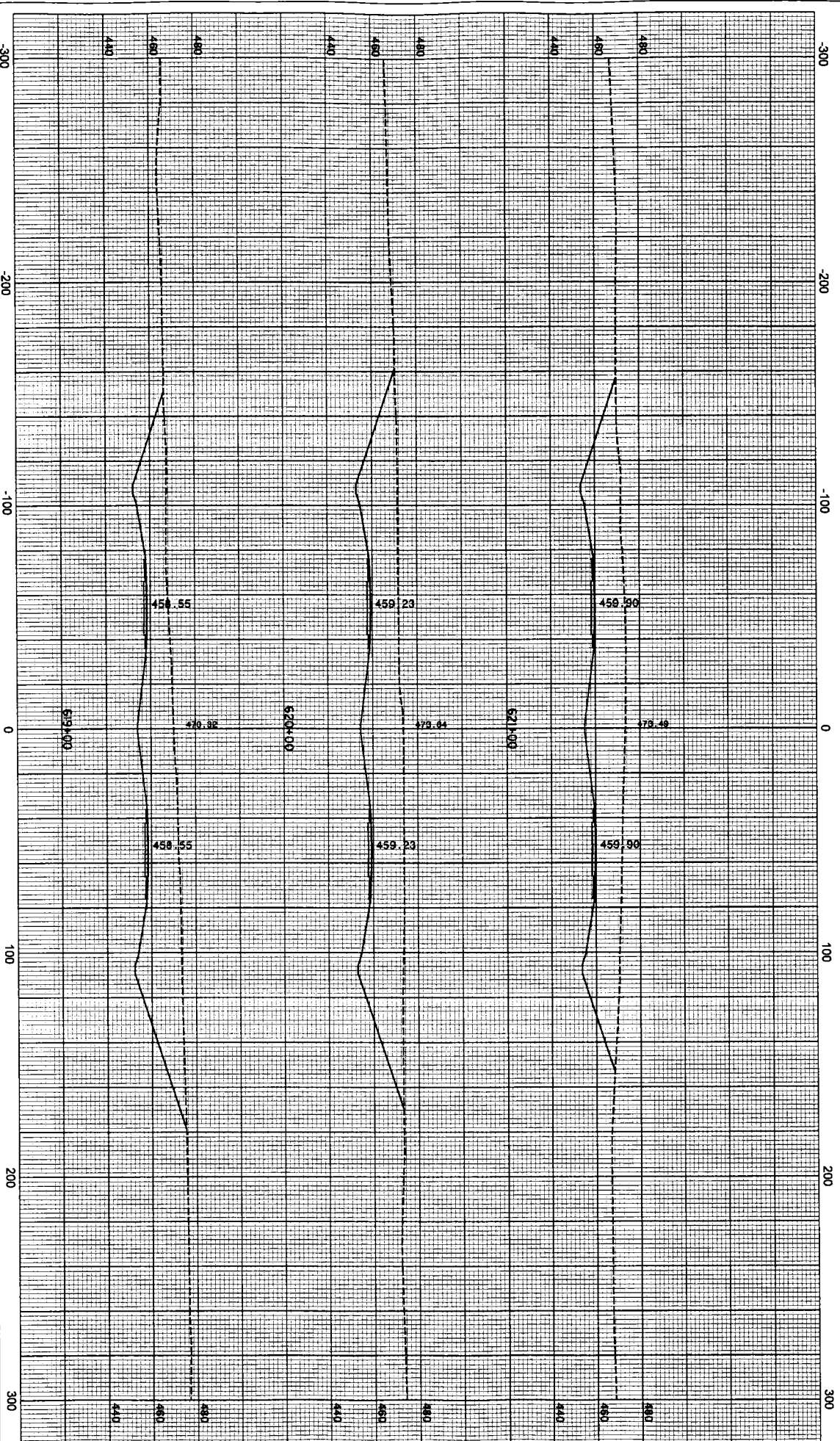


Roadway Cross Sections in Area of Stream Impact #24

RECOMMENDED FOR APPROVAL _____ DATE _____ DESIGNED BY: JMH DRAWN BY: JMH CHECKED BY: JMH		INDIANA DEPARTMENT OF TRANSPORTATION CROSS SECTIONS I-69 - PREFERRED ALTERNATIVE		IDENTIFICATION: _____ SHEET: _____ OF _____ CONTRACT: _____ PROJECT: _____	
--	--	--	--	--	--







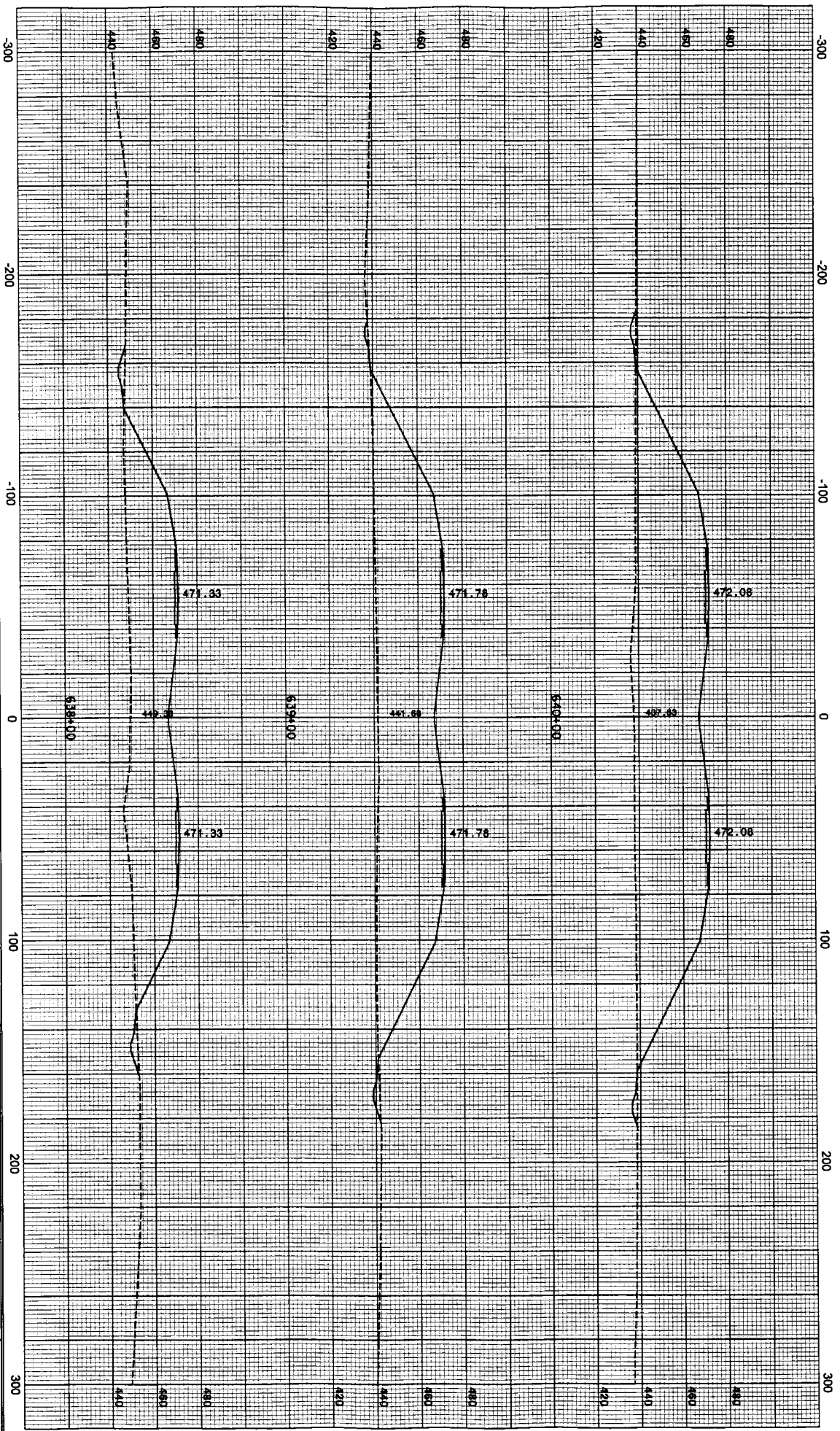
# Roadway Cross Sections in Area of Pond Impact #1

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE
DRAWN	CHECKED	DRAWN	CHECKED	
NAME	NAME	NAME	NAME	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

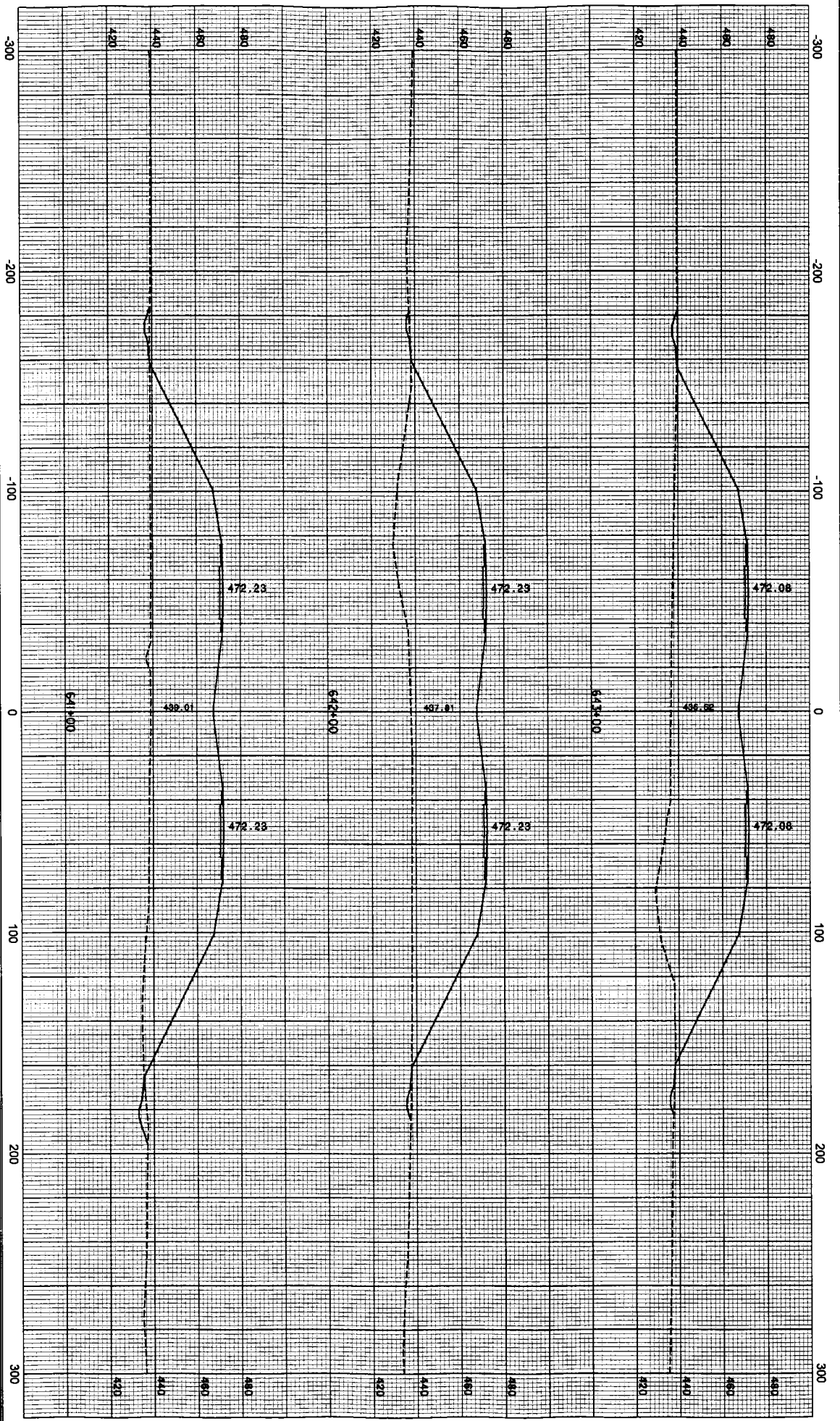
HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 10'	
SHEET		SHEET	
1		1	
PROJECT		PROJECT	
I-69		I-69	





Roadway Cross Sections in Area of Stream Impact #25 and Wetland Impacts #6 and #7

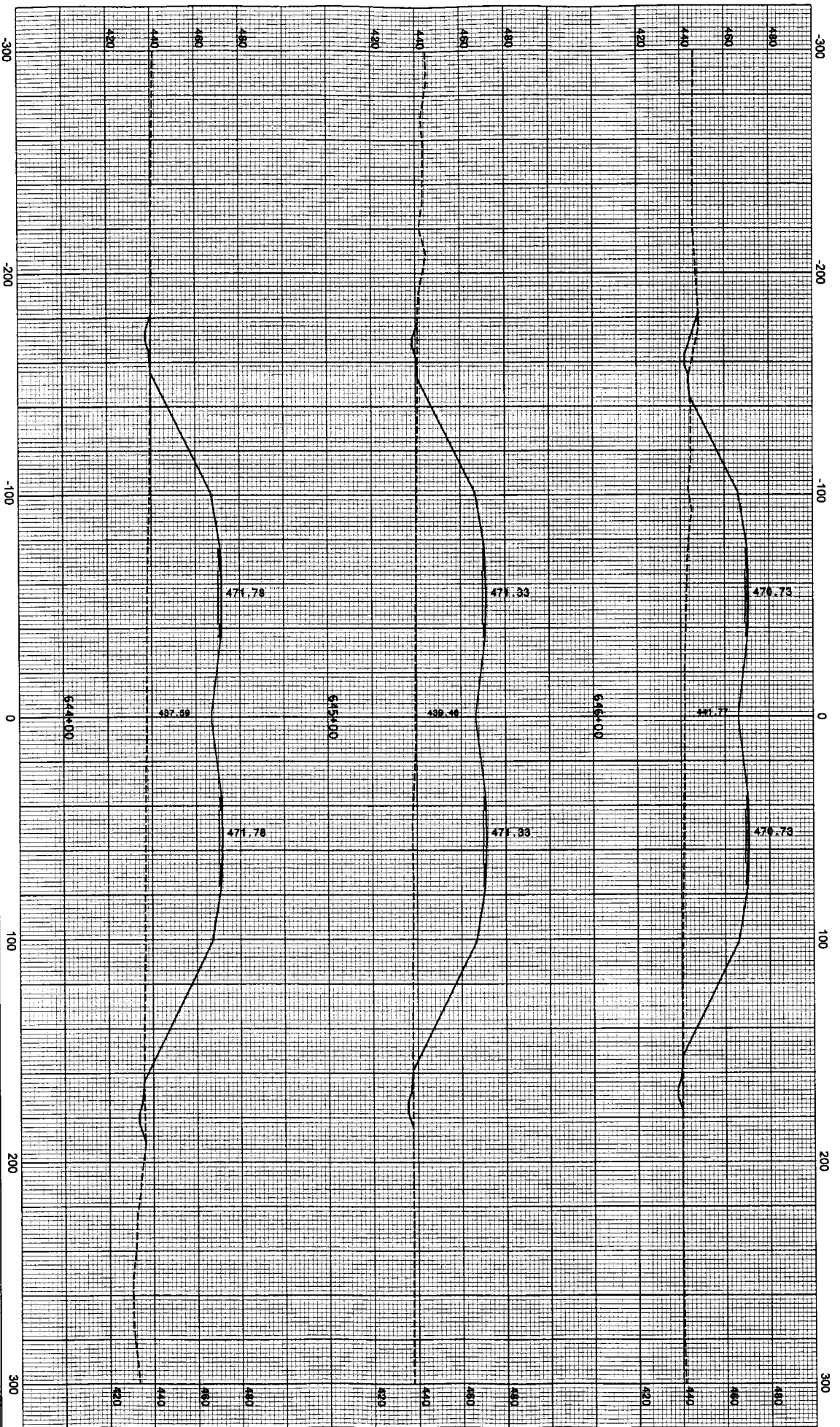
RECOMMENDED FOR APPROVAL DESIGNED BY: <u>                    </u> DATE: <u>                    </u>		INDIANA DEPARTMENT OF TRANSPORTATION		HORIZONTAL SCALE VERTICAL SCALE SHEET NO. CONTRACT NO.	
DRAWN BY: <u>                    </u> CHECKED BY: <u>                    </u>	DESIGNED BY: <u>                    </u> CHECKED BY: <u>                    </u>	CROSS SECTIONS I-69 - PREFERRED ALTERNATIVE		SHEET NO. <u>                    </u> PROJECT NO. <u>                    </u>	



Roadway Cross Sections in Area of Stream Impact #25 and Wetland Impacts #6 and #7

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE
DESIGNED BY	MM	DRAWN BY	MM	
CHECKED BY	MM	CHECKED BY	MM	
INDIANA DEPARTMENT OF TRANSPORTATION				
CROSS SECTIONS				
I-69 - PREFERRED ALTERNATIVE				
HORIZONTAL SCALE		VERTICAL SCALE		SECTION
1" = 100'		1" = 10'		SECTION
SHEET NO.		SHEET NO.		SECTION
1 OF 1		1 OF 1		SECTION
PROJECT		PROJECT		SECTION



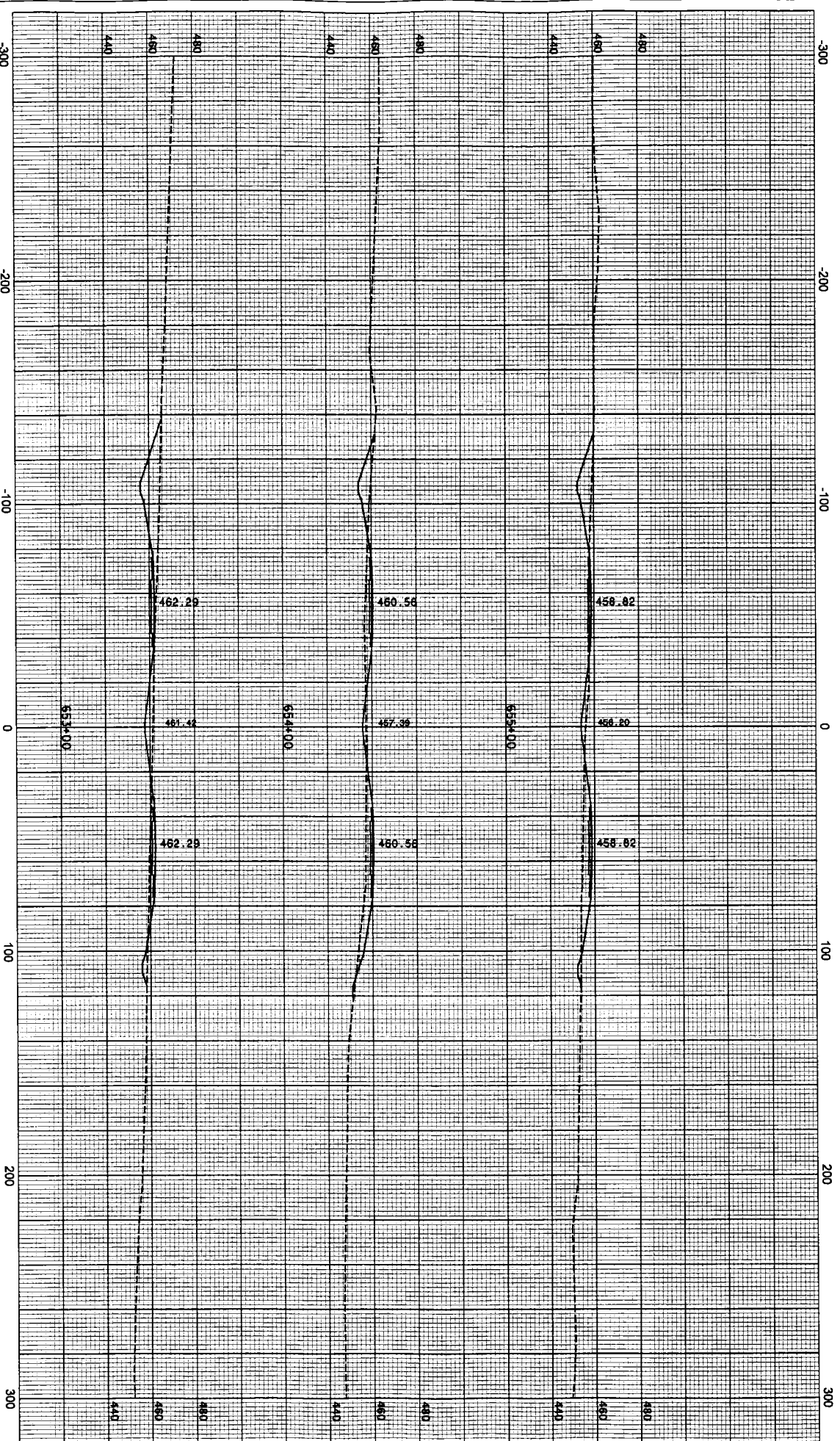


Roadway Cross Sections in Area of Stream Impact #25 and Wetland Impacts #6 and #7

RECOMMENDED FOR APPROVAL  
DESIGN ENGINEER  
DATE  
CHECKED BY: JMW  
DESIGNED BY: JMW  
CHECKED BY: JMW  
DESIGNED BY: JMW

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE  
VERTICAL SCALE  
SHEET NO.  
SHEET TOTAL  
PROJECT NO.  
PROJECT NAME



Roadway Cross Sections in Area of Stream Impact #26 and Pond Impacts #2

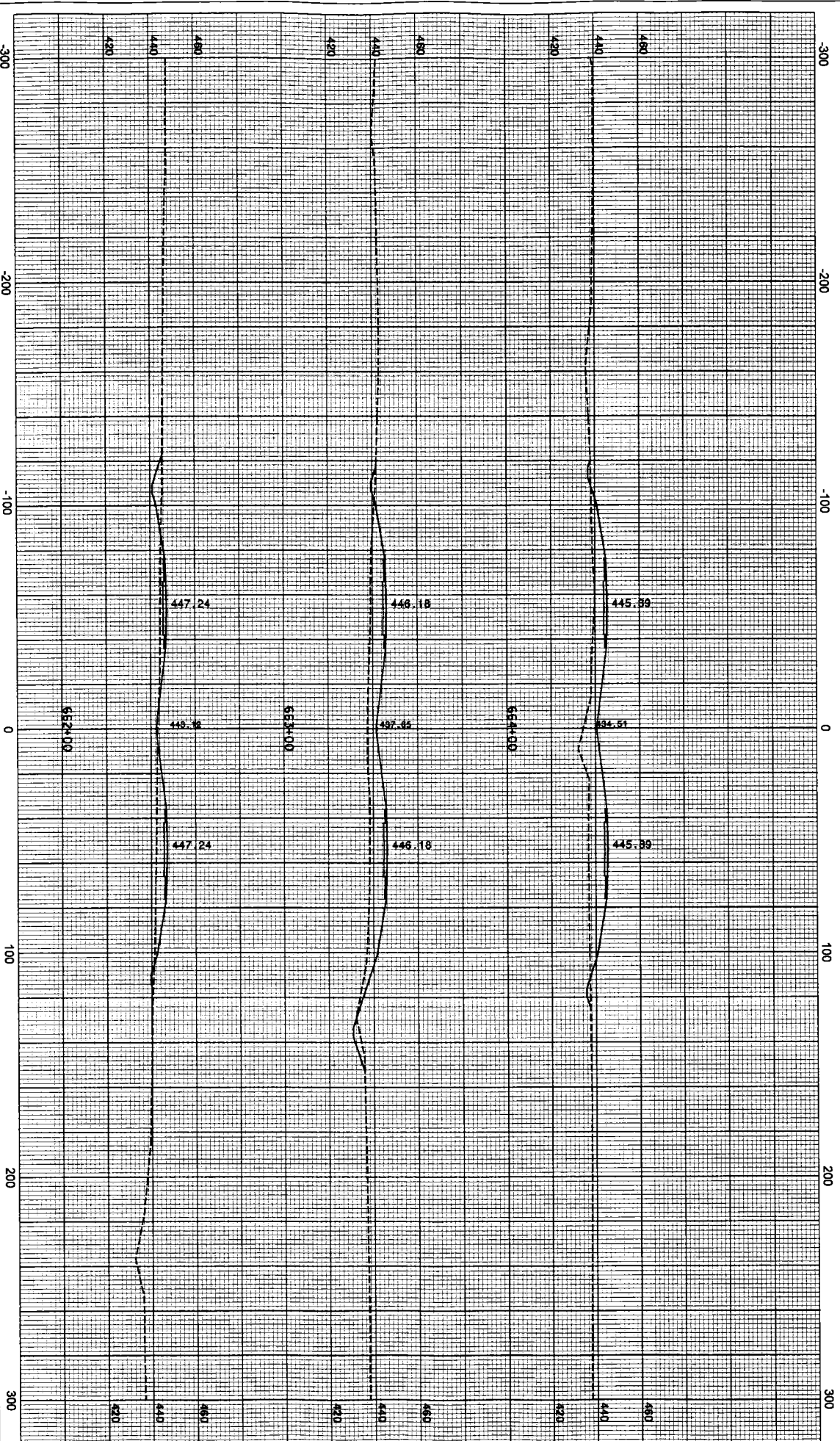
RECOMMENDED FOR APPROVAL			
DESIGNED BY	MM	DRAWN BY	MM
CHECKED BY	MM	CHECKED BY	MM
DATE			

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 4'	
SHEET NO.		SHEET NO.	
CONTRACT		CONTRACT	
X 1/4" = 1' PROJECT		X 1/4" = 1' PROJECT	







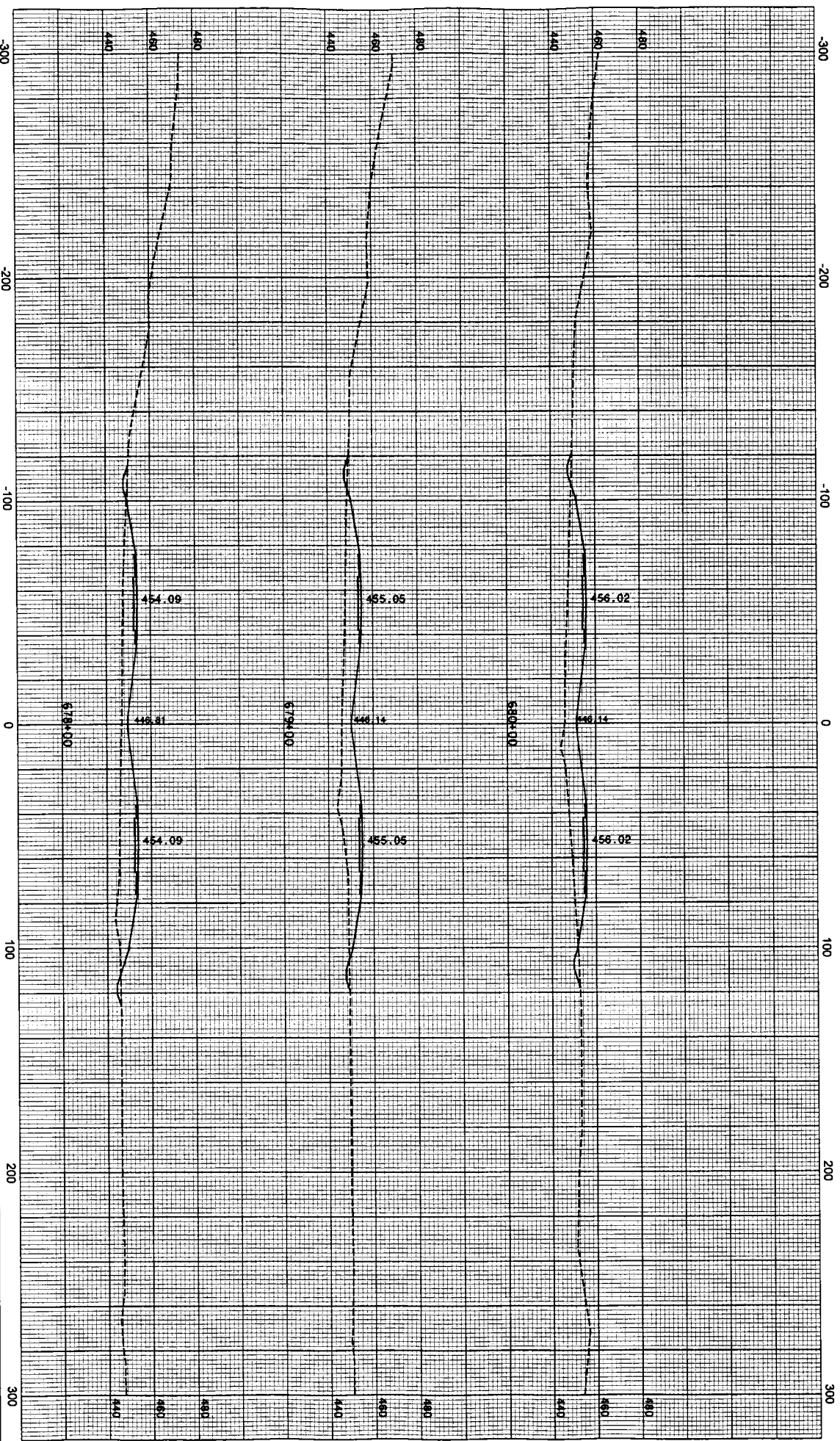
# Roadway Cross Sections in Area of Stream Impact #27

RECOMMENDED FOR APPROVAL			
DESIGNED BY	DATE	DRAWN BY	CHECKED BY
MM		MM	
MM		MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

INVENTORY	BRIDGE FILE
SECTION	SECTION
SURVEY WORK	SECTION
CONTRACT	PROJECT
	PROJECT



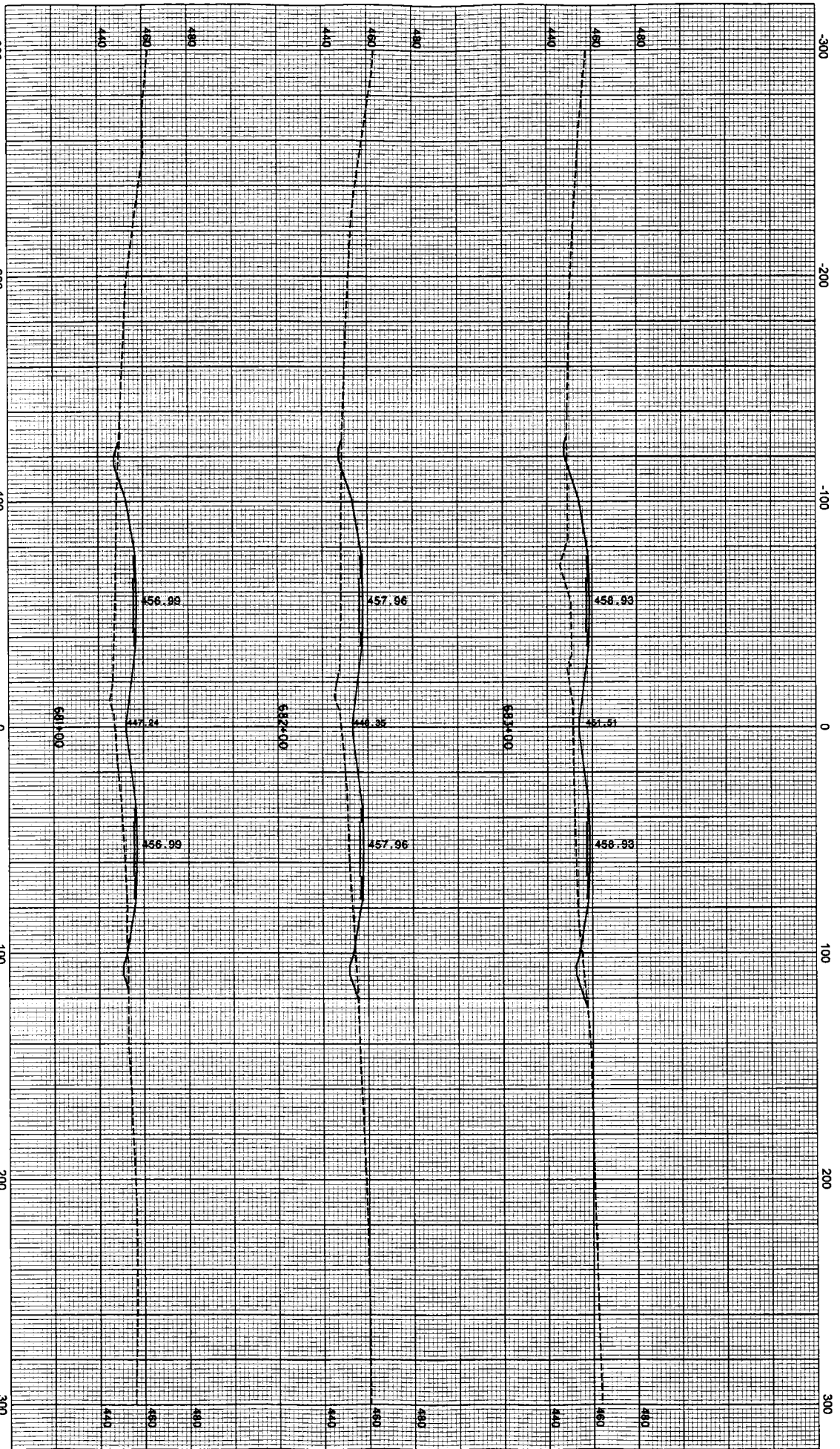


Roadway Cross Sections in Area of Stream Impact #28

DESIGNED BY		DRAWN BY		CHECKED BY	
MM		MM		MM	
DATE		DATE		DATE	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 10'	
SHEET NO.		SHEET NO.	
1		1	
PROJECT		PROJECT	



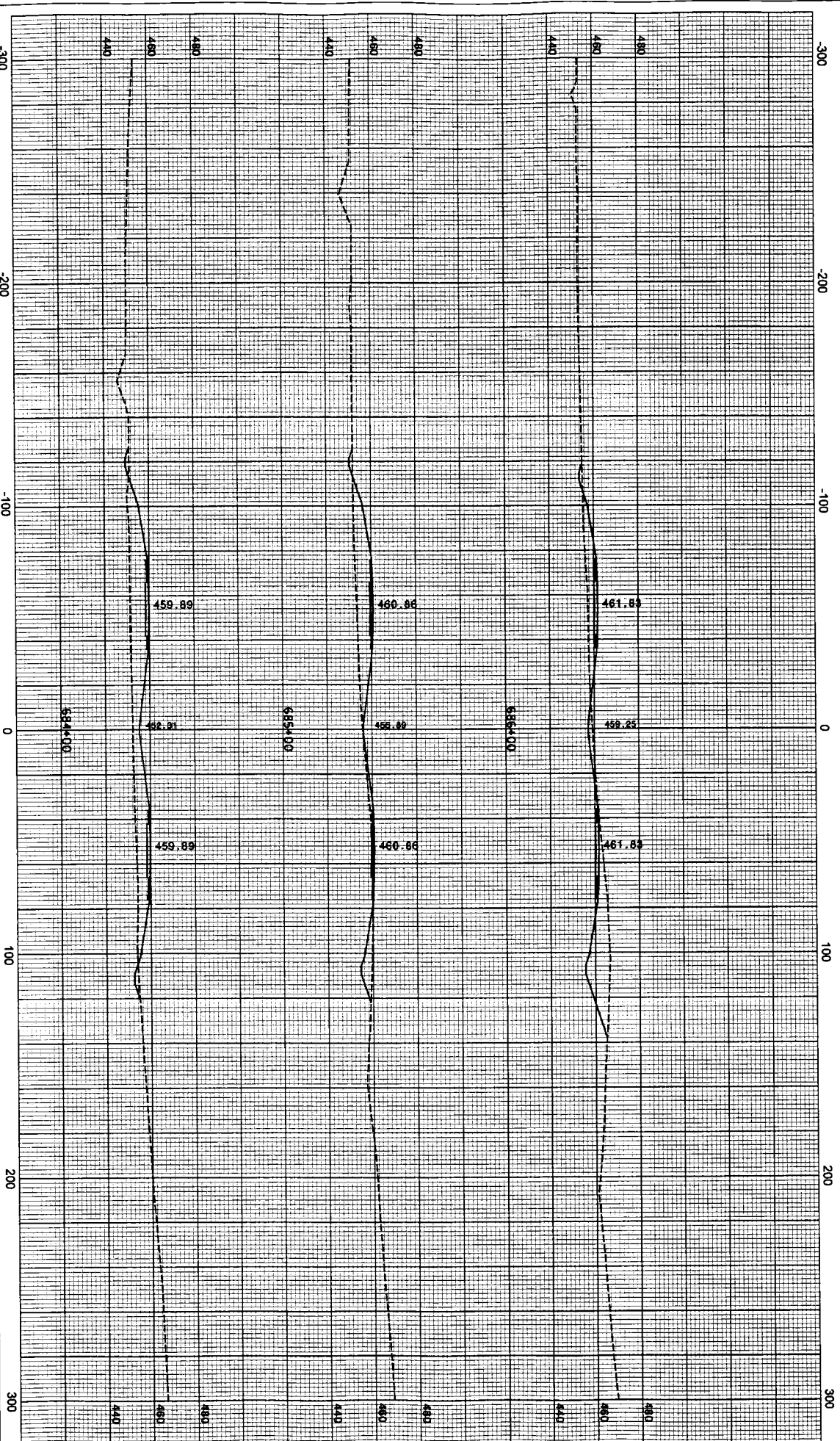
# Roadway Cross Sections in Area of Stream Impact #28

RECOMMENDED FOR APPROVAL		DESIGNED BY		DATE	
DRAWN BY		CHECKED BY			

INDIANA DEPARTMENT OF TRANSPORTATION	
CROSS SECTIONS	
I-69 - PREFERRED ALTERNATIVE	

HORIZONTAL SCALE		VERTICAL SCALE	
SUBJECT BOOK		SHEET	
CONTRACT		PROJECT	



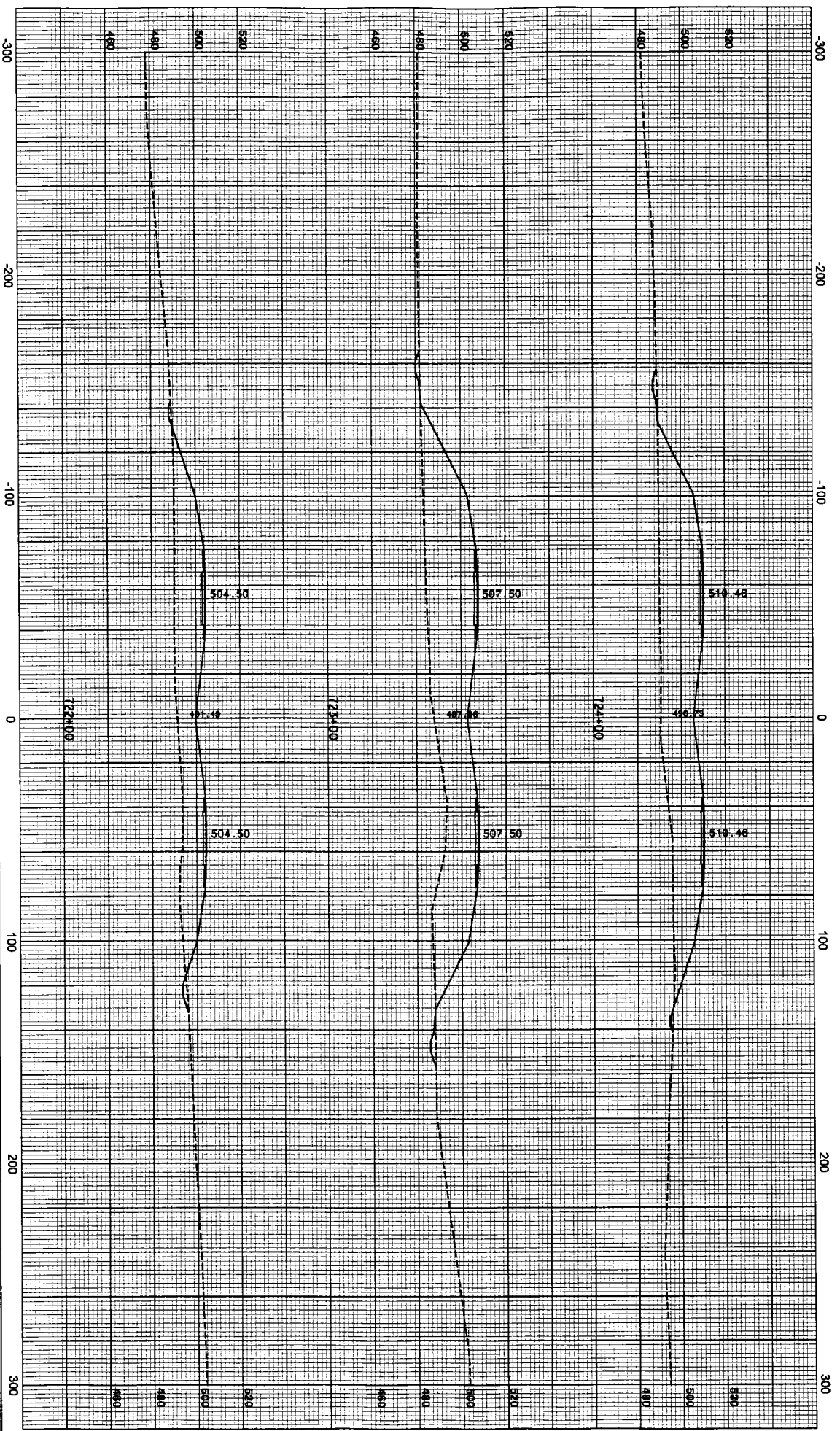


Roadway Cross Sections in Area of Stream Impact #28

RECOMMENDED FOR APPROVAL			
DESIGNED BY	DATE	DESIGNED BY	DATE
DRAWN BY	DATE	DRAWN BY	DATE
CHECKED BY	DATE	CHECKED BY	DATE

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 4'	
SHEET NO.		SHEET NO.	
PROJECT NO.		PROJECT NO.	



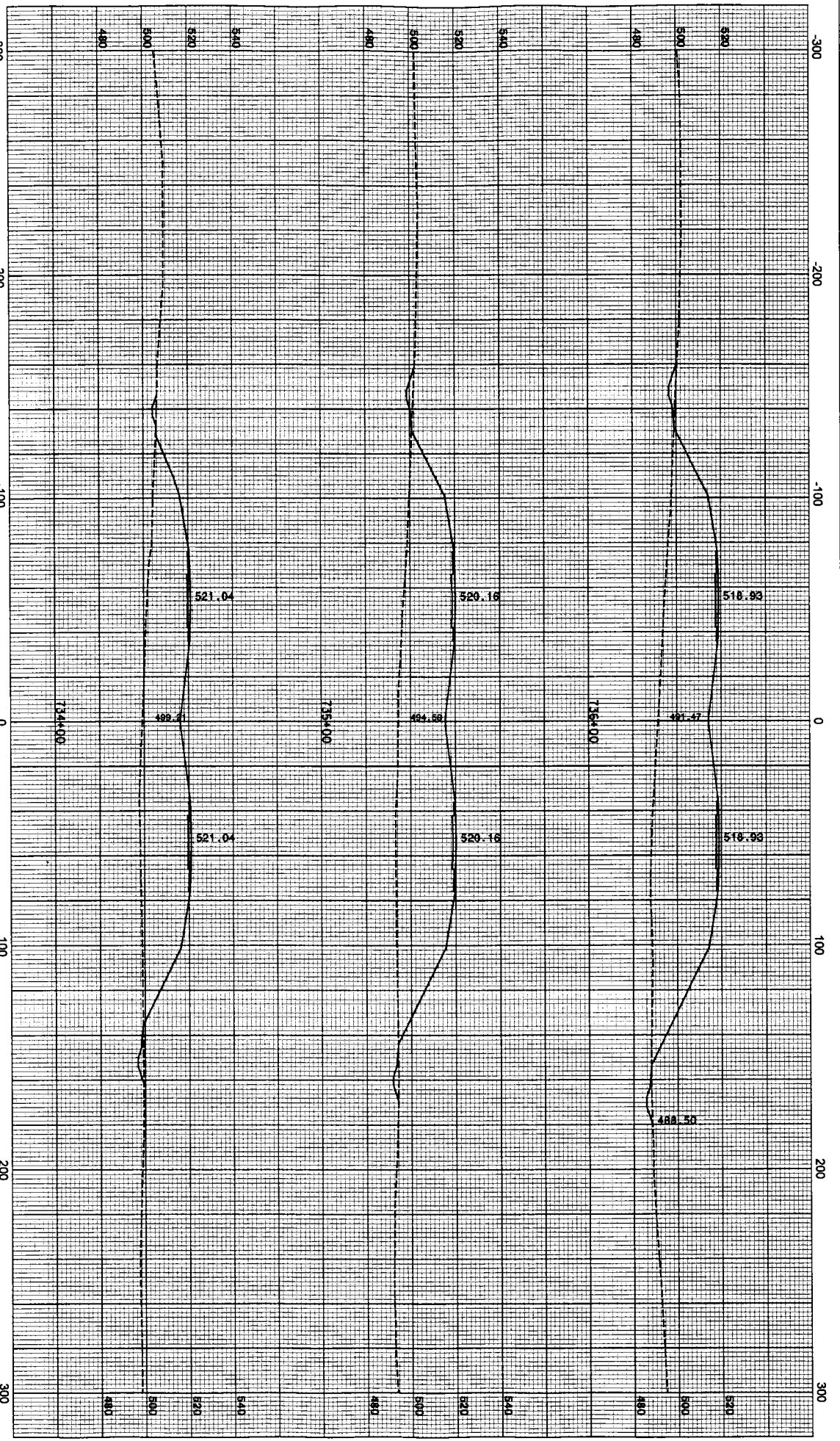
Roadway Cross Sections in Area of Wetland Impact #8

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE
DRAWN BY	MM	DRAWN BY	MM	
CHECKED BY	MM	CHECKED BY	MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 4'	
SHEET NO.		SHEET NO.	
CONTRACT NO.		CONTRACT NO.	
PROJECT NO.		PROJECT NO.	



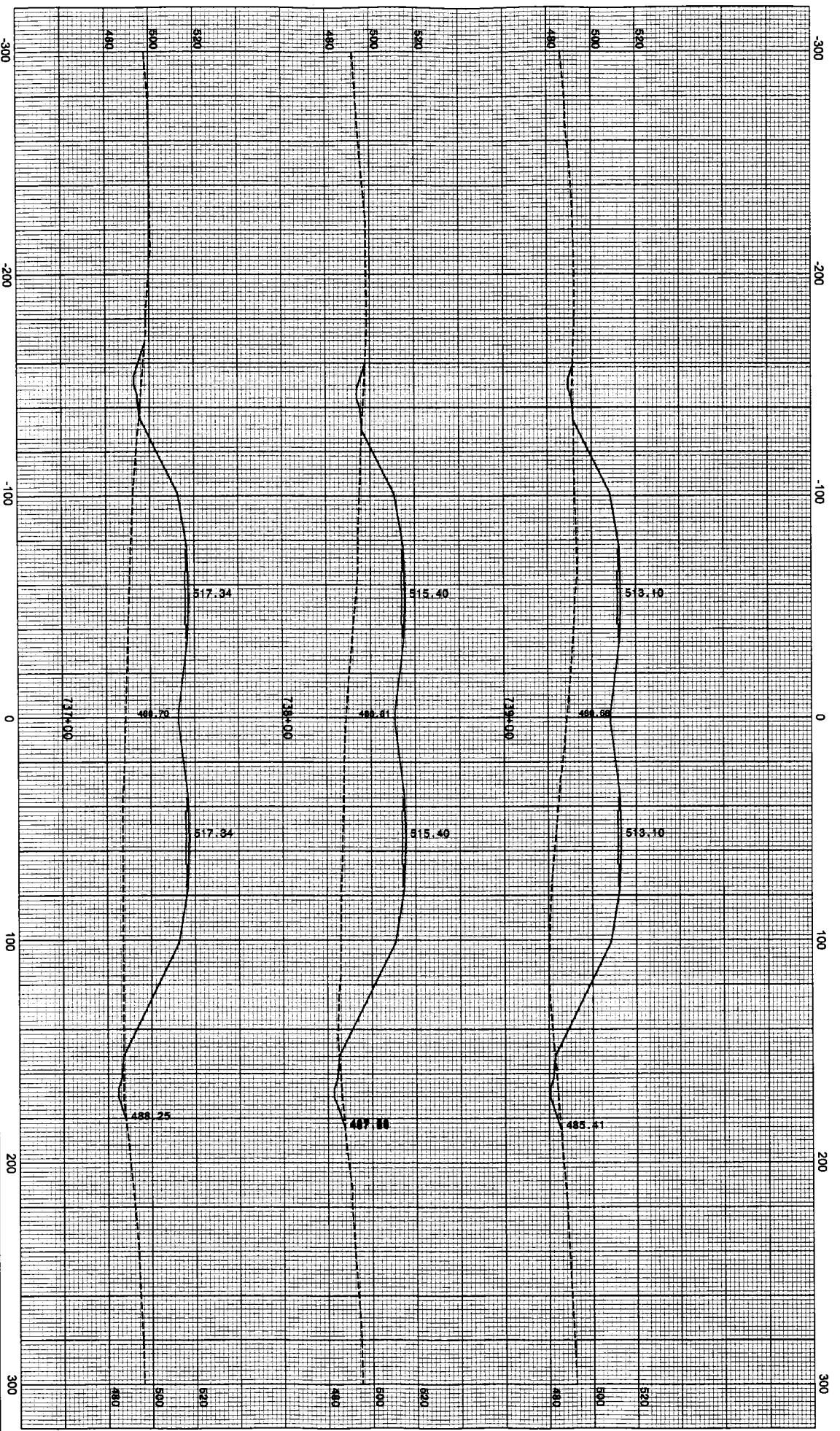


Roadway Cross Sections in Area of Stream Impact #29 and Wetland Impacts #9, #10, #11, and #12

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE	
DRAWN BY	MM	DRAWN BY	MM		
CHECKED BY	MM	CHECKED BY	MM		

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 10'	
SHEET NO.		SHEET NO.	
PROJECT		PROJECT	



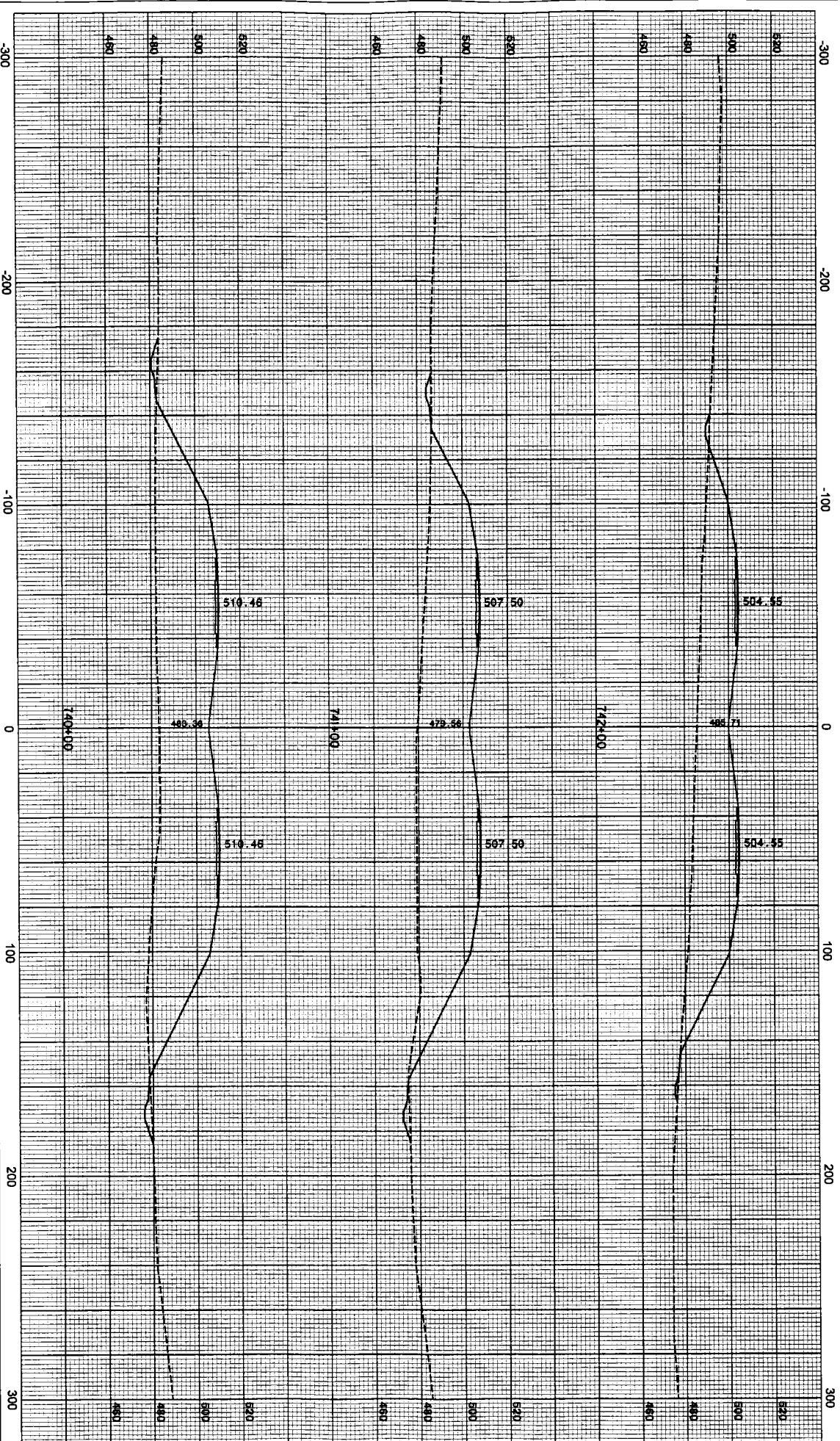
Roadway Cross Sections in Area of Stream Impact #29 and Wetland Impacts #9, #10, #11, and #12

DESIGNED BY		CHECKED BY	
NAME	DATE	NAME	DATE

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

VERTICAL SCALE		HORIZONTAL SCALE	
1" = 10'	DISPOSITION	1" = 100'	DISPOSITION



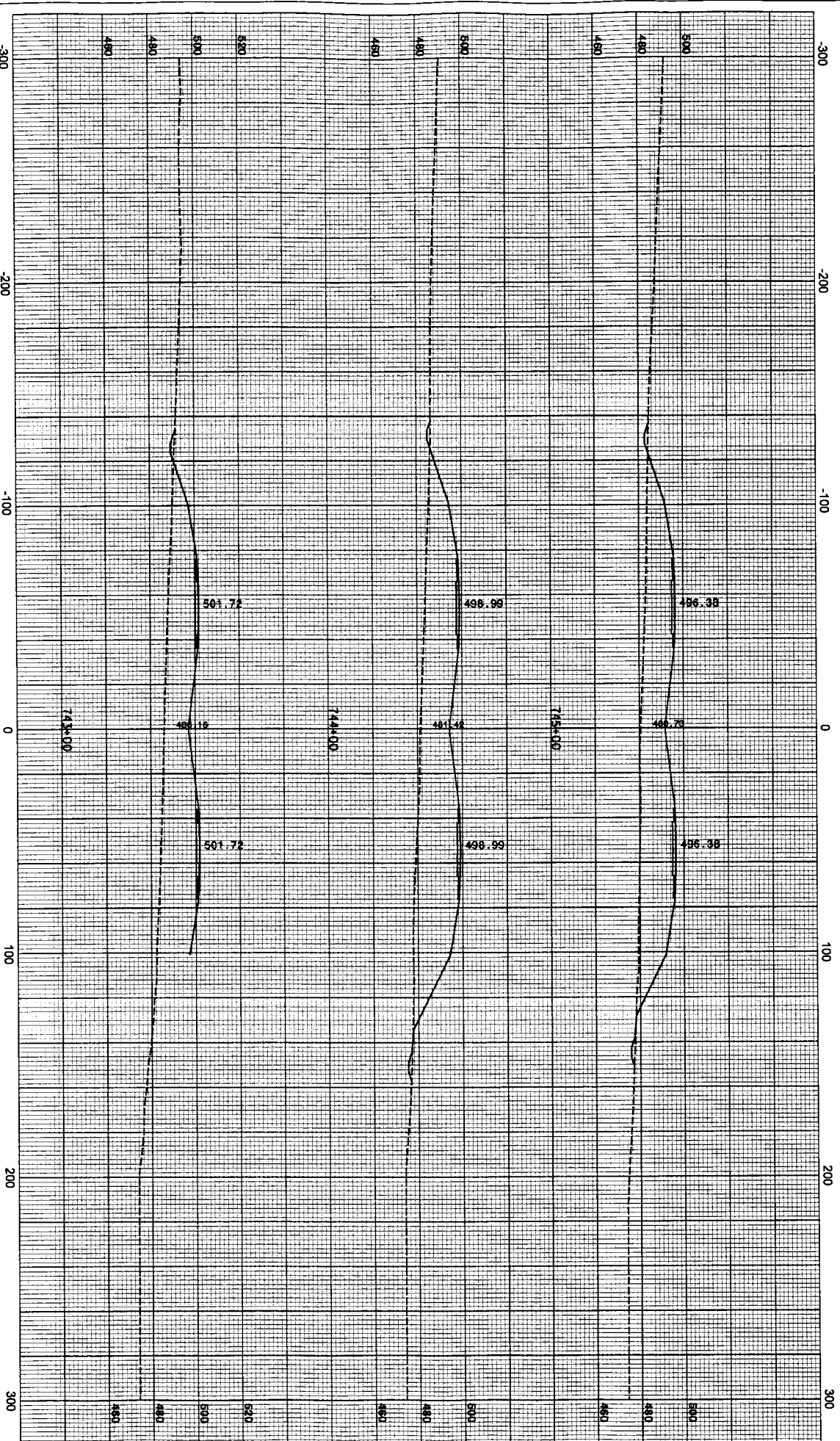


Roadway Cross Sections in Area of Stream Impact #29 and Wetland Impacts #9, #10, #11, and #12

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE
DRAWN	MM	DRAWN	MM	
CHECKED	MM	CHECKED	MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 4'	
SURVEY BOOK		CONTRACT	
		X (50)	
		PROJECT	



Roadway Cross Sections in Area of Stream Impact #29 and Wetland Impacts #9, #10, #11, and #12

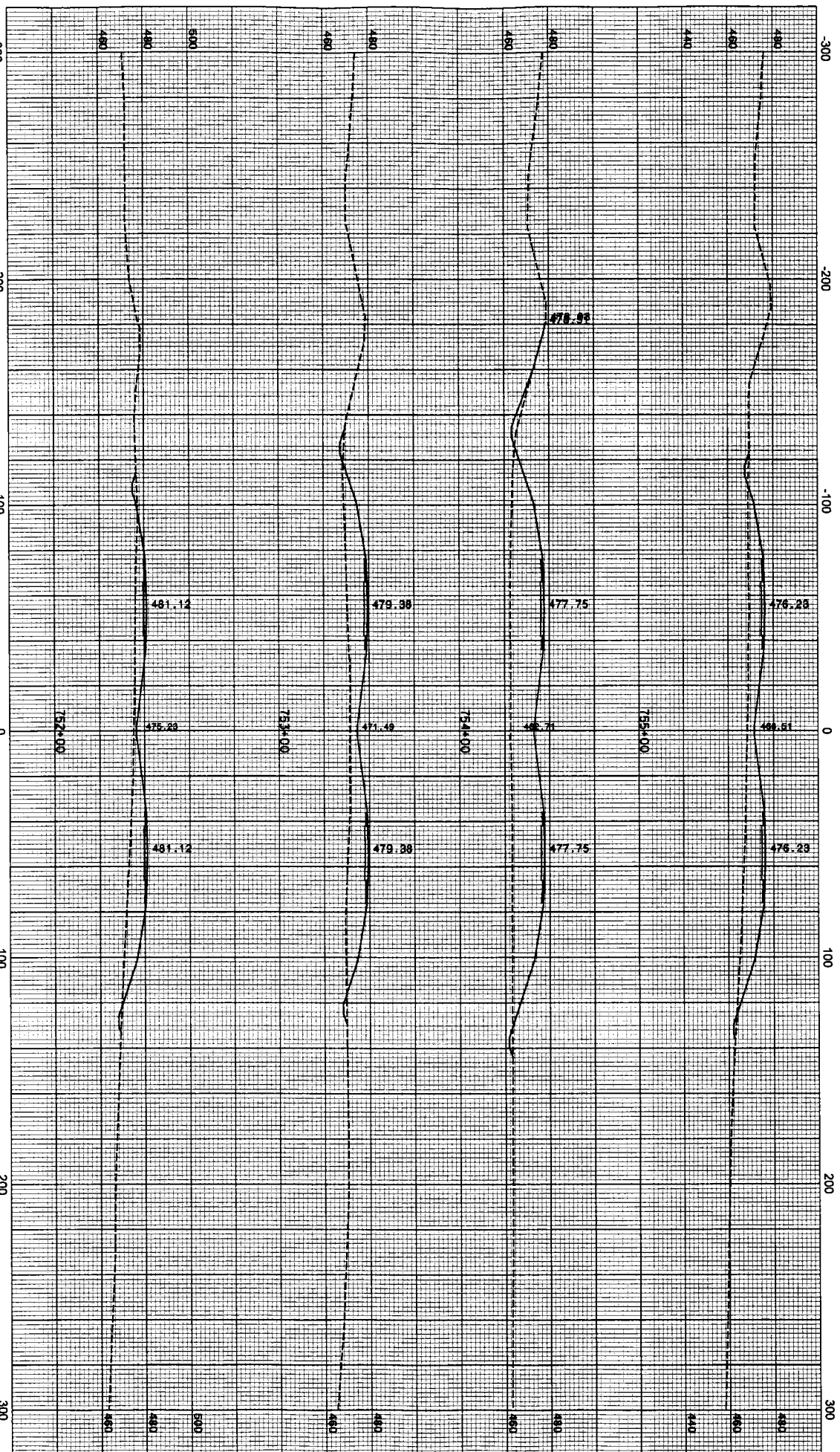
DESIGNED FOR APPROVAL		DESIGN ENGINEER		DATE
DESIGNED	MM	DRAWN	MM	
CHECKED	MM	CHECKED	MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 10'	
SHEET BOOK		SHEET BOOK	
CONTRACT		CONTRACT	







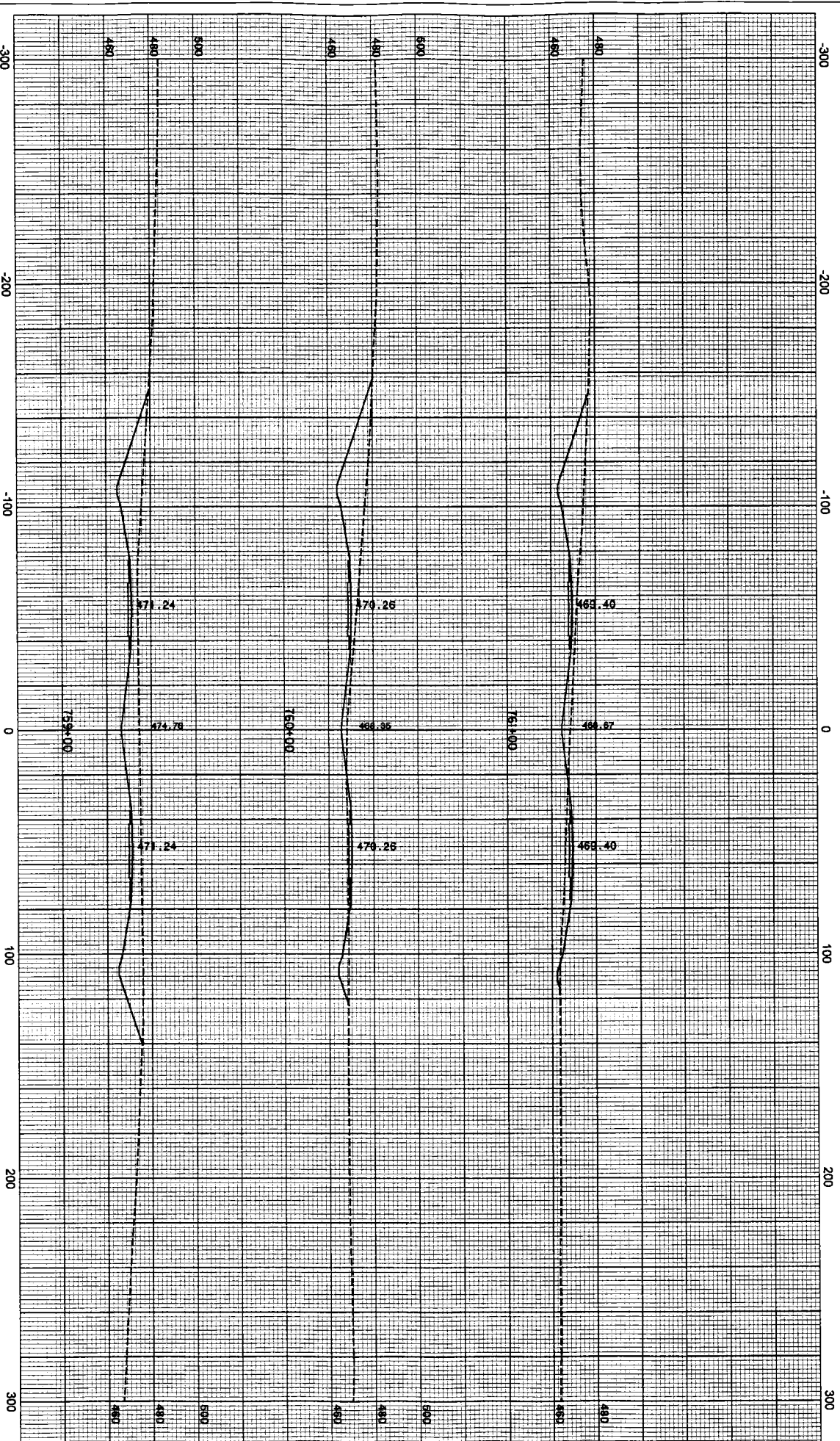
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RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE
DRAWN	MM	DRAWN	MM	
CHECKED	MM	CHECKED	MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE		REVISION
1" = 40'		1" = 10'		
SHEET NO.		SHEET NO.		
CONTRACT		CONTRACT		



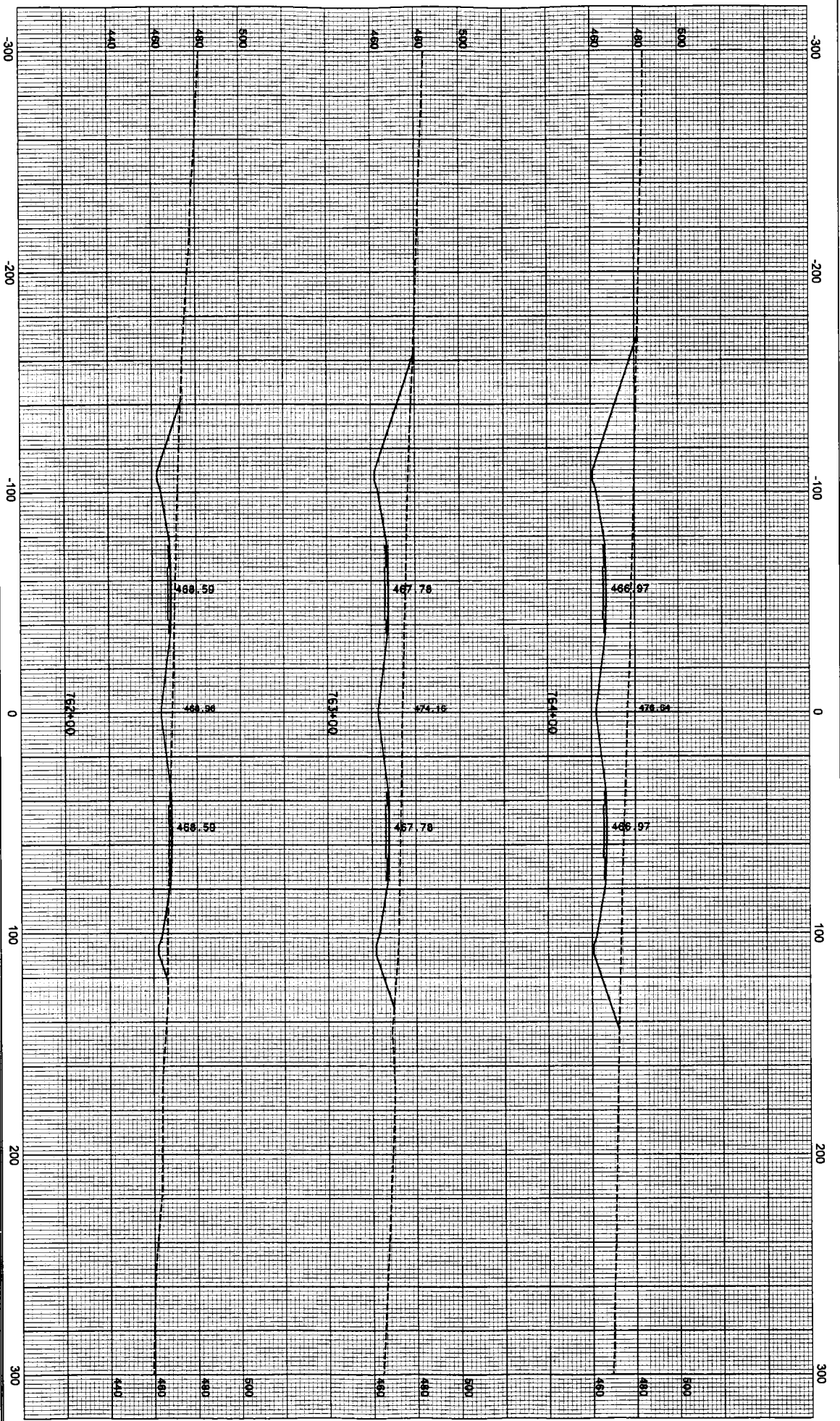


Roadway Cross Sections in Area of Stream Impact #31 and #32

RECOMMENDED FOR APPROVAL		DESIGN ENGINEER		DATE
DRAWN BY	MM	DRAWN BY	MM	
CHECKED BY	MM	CHECKED BY	MM	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

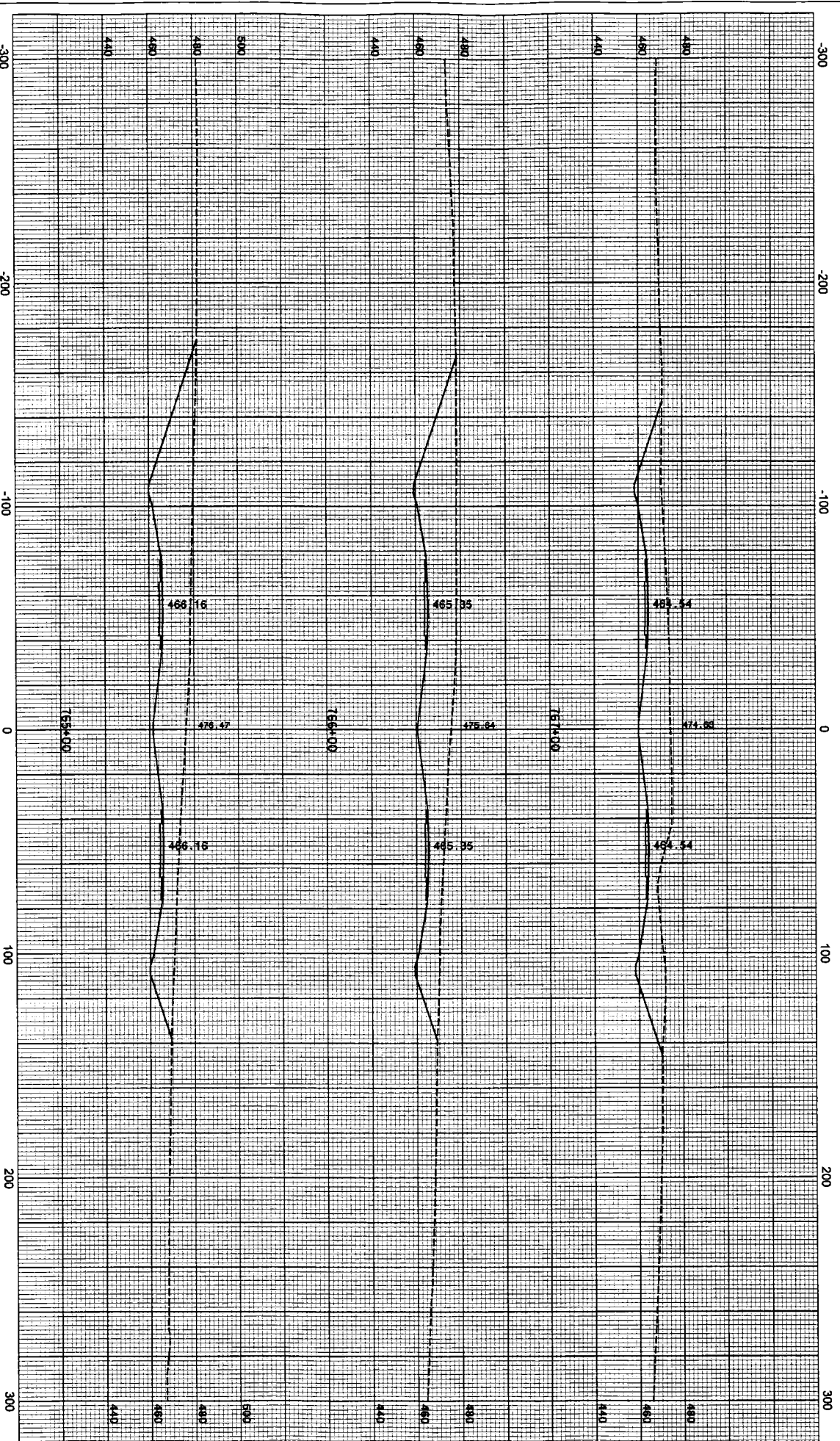
HORIZONTAL SCALE		VERTICAL SCALE	
1" = 40'		1" = 4'	
SHEET BOOK		SHEET	
CONTINUED		PROJECT	



Roadway Cross Sections in Area of Stream Impact #31 and #32

RECOMMENDED FOR APPROVAL DRAWN BY: <u>          </u> DATE: <u>          </u> CHECKED BY: <u>          </u>		DEPARTMENT OF TRANSPORTATION CROSS SECTIONS I-69 - PREFERRED ALTERNATIVE		HORIZONTAL SCALE 1" = 40'		VERTICAL SCALE 1" = 10'		SHEET 1 OF 1	
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Roadway Cross Sections in Area of Stream Impact #33

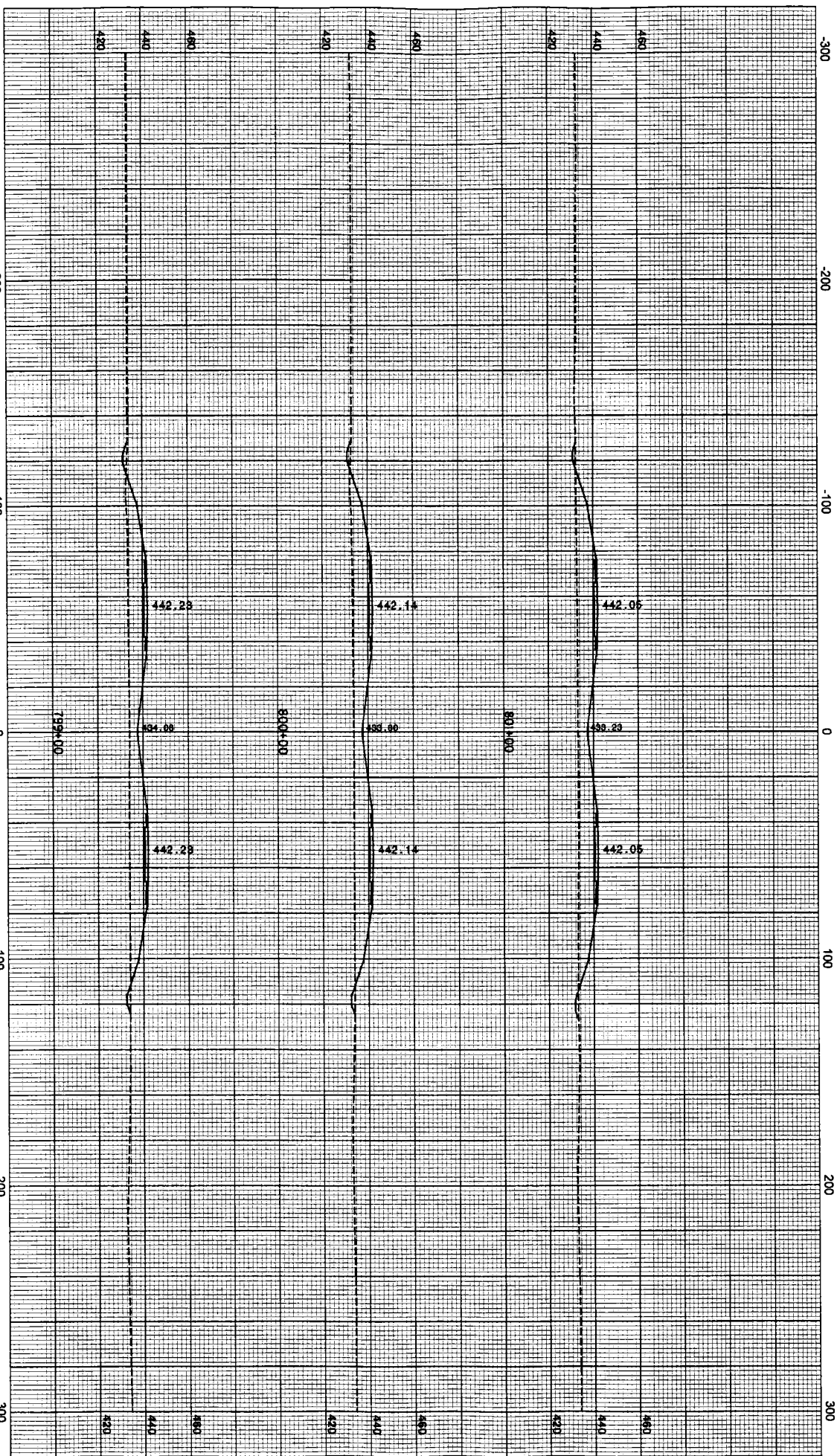
RECOMMENDED FOR APPROVAL		DESIGN NUMBER		DATE	
DESIGNED BY	MM	DRAWN BY	MM	CHECKED BY	MM
CHECKED BY	MM	CHECKED BY	MM	CHECKED BY	MM

INDIANA DEPARTMENT OF TRANSPORTATION	
CROSS SECTIONS	
I-69 - PREFERRED ALTERNATIVE	

HORIZONTAL SCALE		VERTICAL SCALE	
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SHEET NO.		SHEET NO.	
1 OF 1		1 OF 1	
PROJECT		PROJECT	





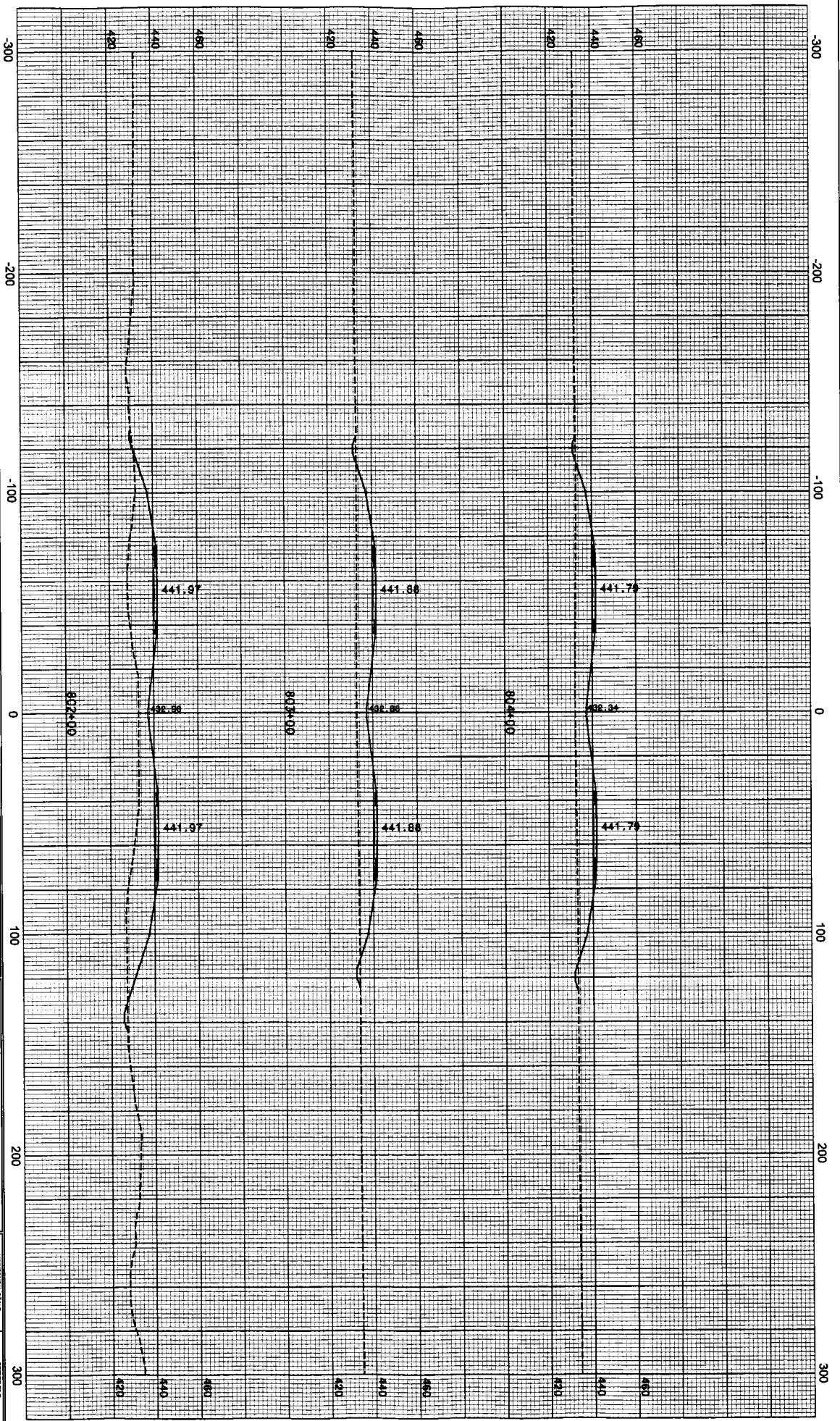


# Roadway Cross Sections in Area of Stream Impact #34

RECOMMENDED FOR APPROVAL		DESIGN NUMBER		DATE	
DESIGNED BY	MM	DRAWN BY	MM	CHECKED BY	MM

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
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SHEET NO.	1	SHEET NO.	1
CONTRACT		CONTRACT	



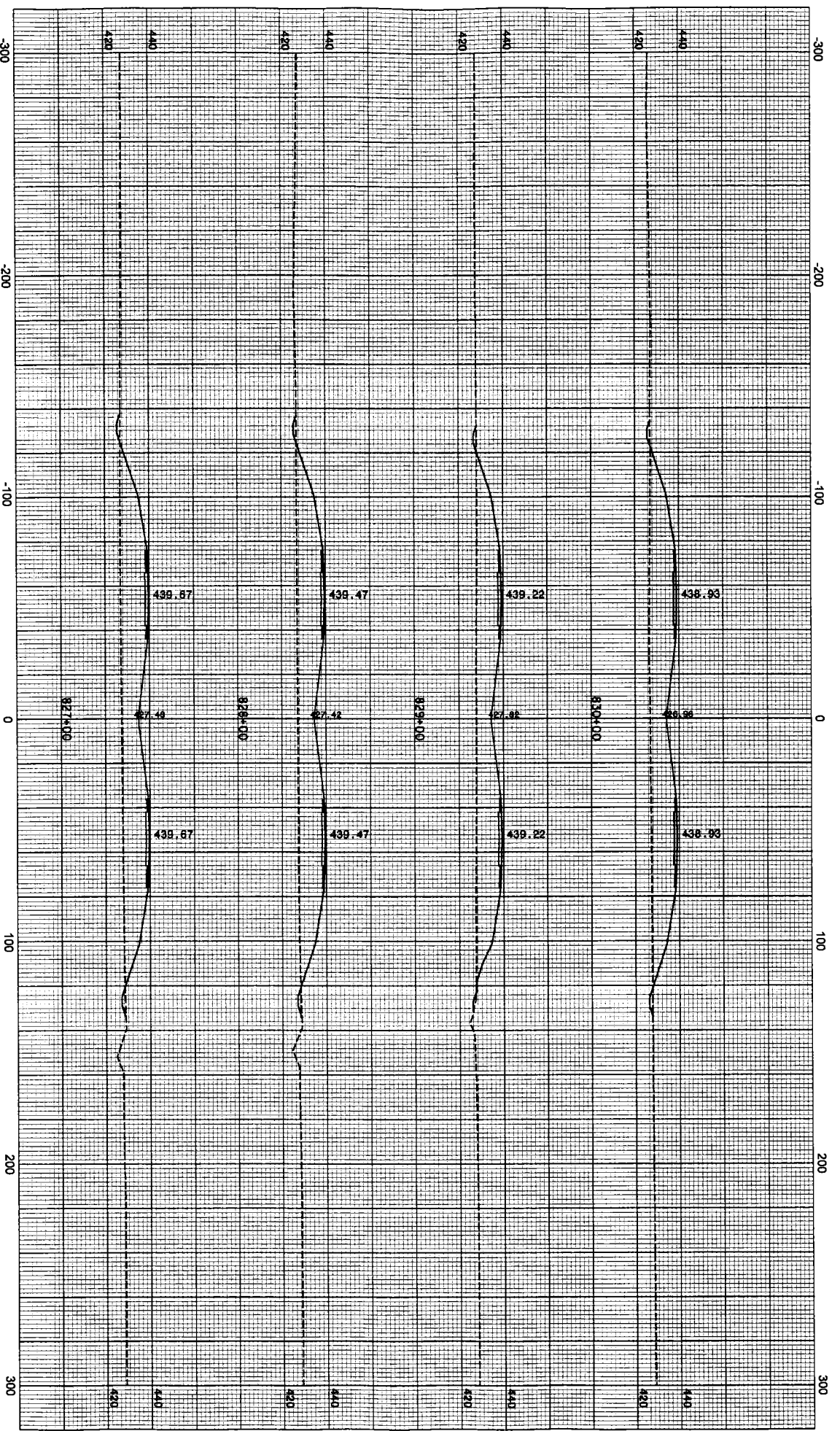
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RECOMMENDED FOR APPROVAL			
DESIGNED BY	DATE	DESIGN ENGINEER	DATE
DRAWN BY		DRAWN BY	
CHECKED BY		CHECKED BY	

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
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SHEET NO.		SHEET NO.	
PROJECT NO.		PROJECT NO.	



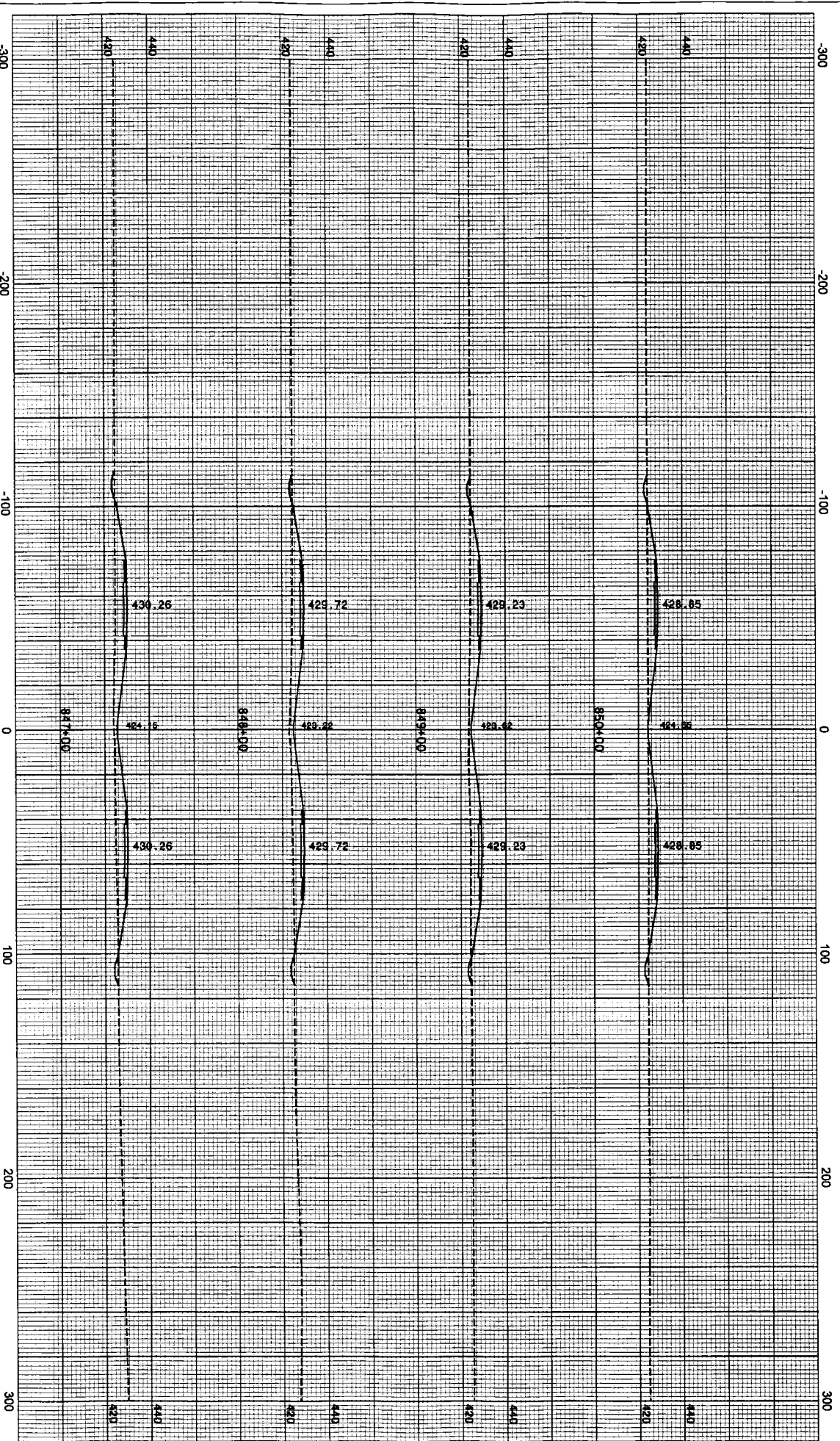


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RECOMMENDED FOR APPROVAL			
DESIGNED	BY	DATE	DESIGN NUMBER
DESIGNED	BY	DATE	DESIGN NUMBER

INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

HORIZONTAL SCALE		VERTICAL SCALE	
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SHEET NO.	PROJECT	SHEET NO.	PROJECT



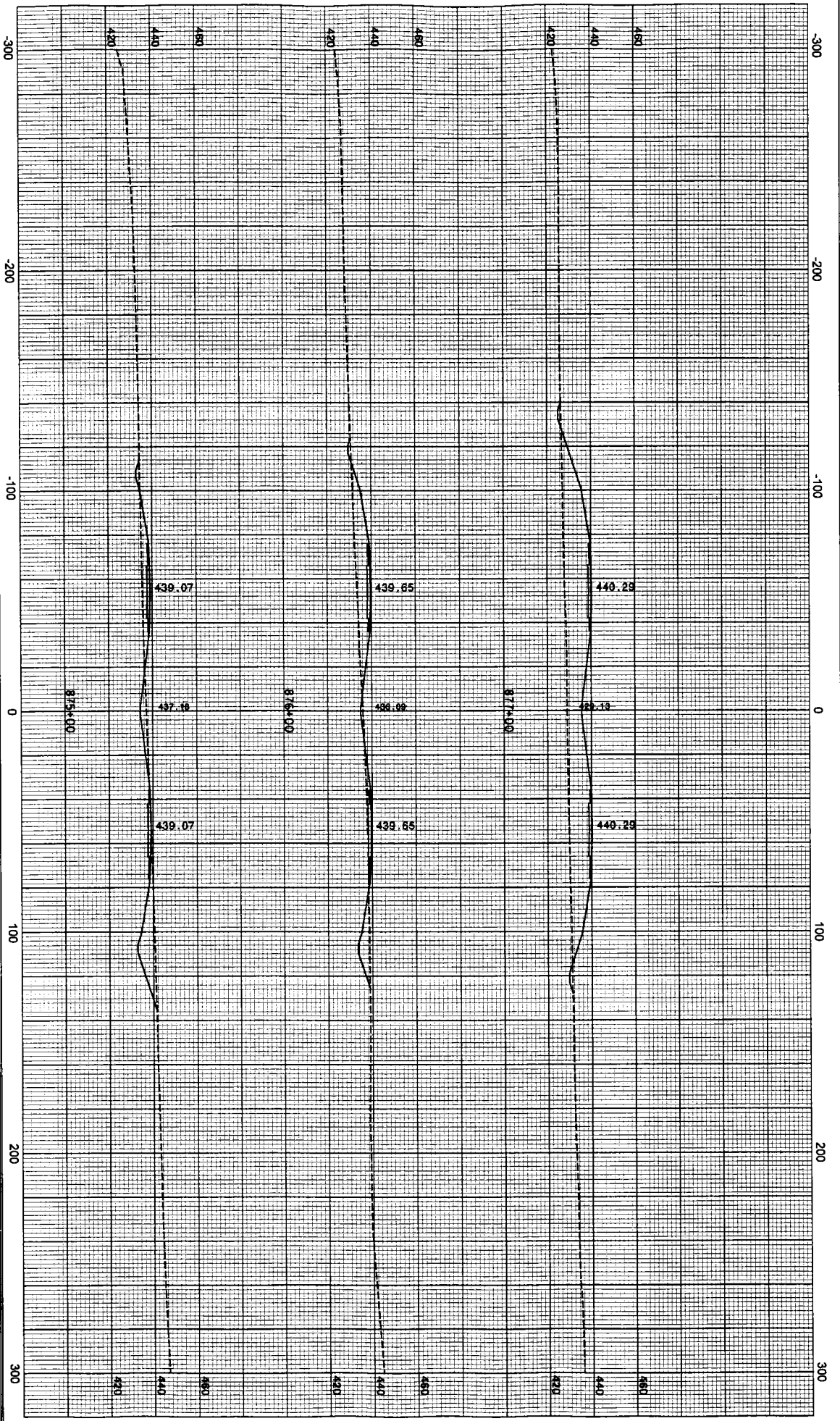
Roadway Cross Sections in Area of Stream Impact #36

DESIGNED BY		CHECKED BY		DATE	
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DESIGNED BY		CHECKED BY		DATE	
MM	MM	MM	MM	MM	MM

INDIANA DEPARTMENT OF TRANSPORTATION	
CROSS SECTIONS	
I-69 - PREFERRED ALTERNATIVE	

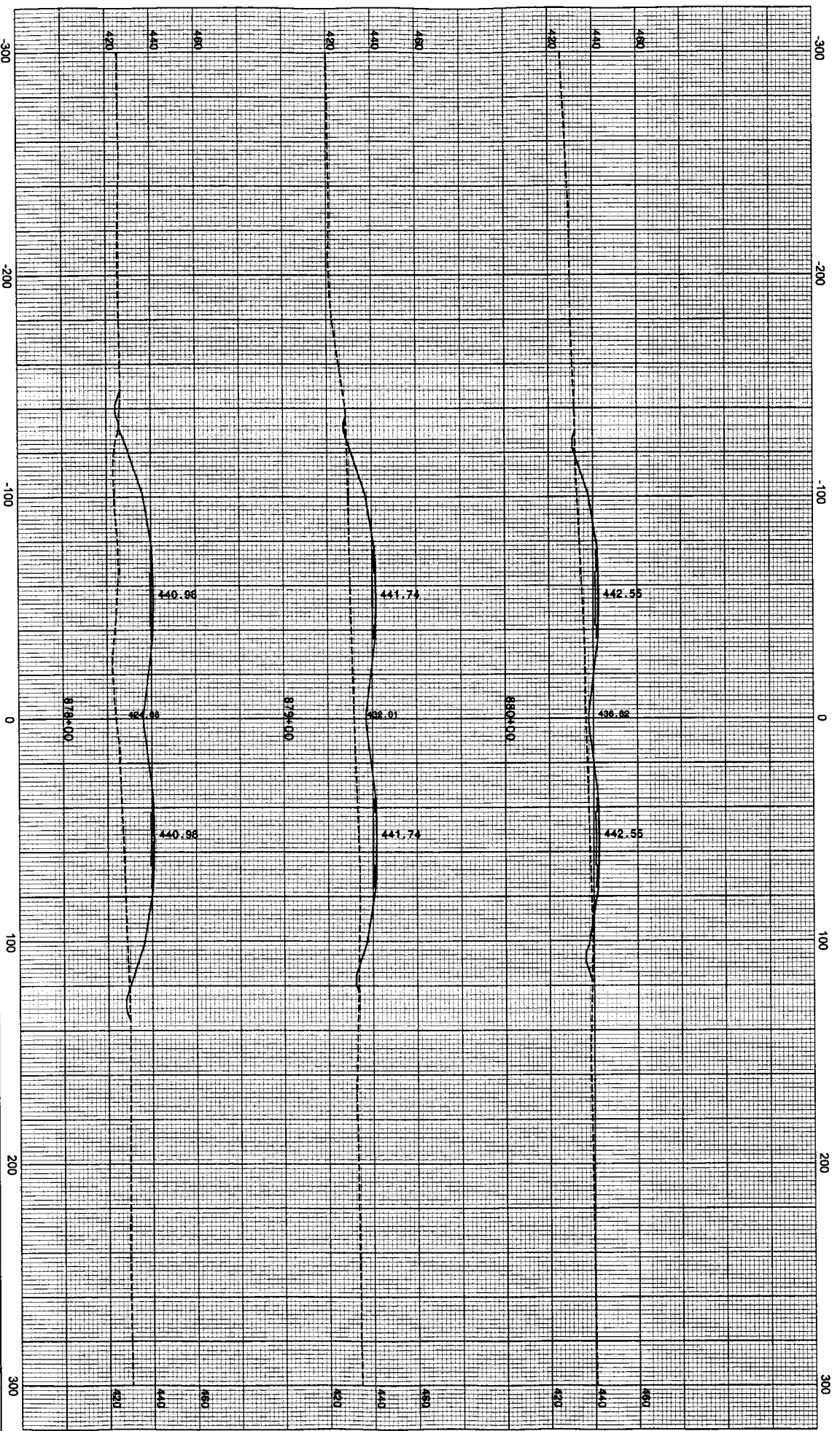
HORIZONTAL SCALE		VERTICAL SCALE	
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CONTRACT		PROJECT	
A. 100		S. 1	





Roadway Cross Sections in Area of Stream Impact #37, #38, and #39

RECOMMENDED FOR APPROVAL		DESIGNER'S DATE		INDIANA DEPARTMENT OF TRANSPORTATION		HORIZONTAL SCALE VERTICAL SCALE SHEET NO. 1 OF 1 PROJECT	
DRAWN BY NAME	CHECKED BY NAME	DRAWN BY NAME	CHECKED BY NAME	CROSS SECTIONS 1-69 - PREFERRED ALTERNATIVE		HORIZONTAL SCALE VERTICAL SCALE SHEET NO. 1 OF 1 PROJECT	



Roadway Cross Sections in Area of Stream Impact #37, #38, and #39

DESIGNED BY	MD	DESIGNED BY	MD
CHECKED BY	MD	CHECKED BY	MD

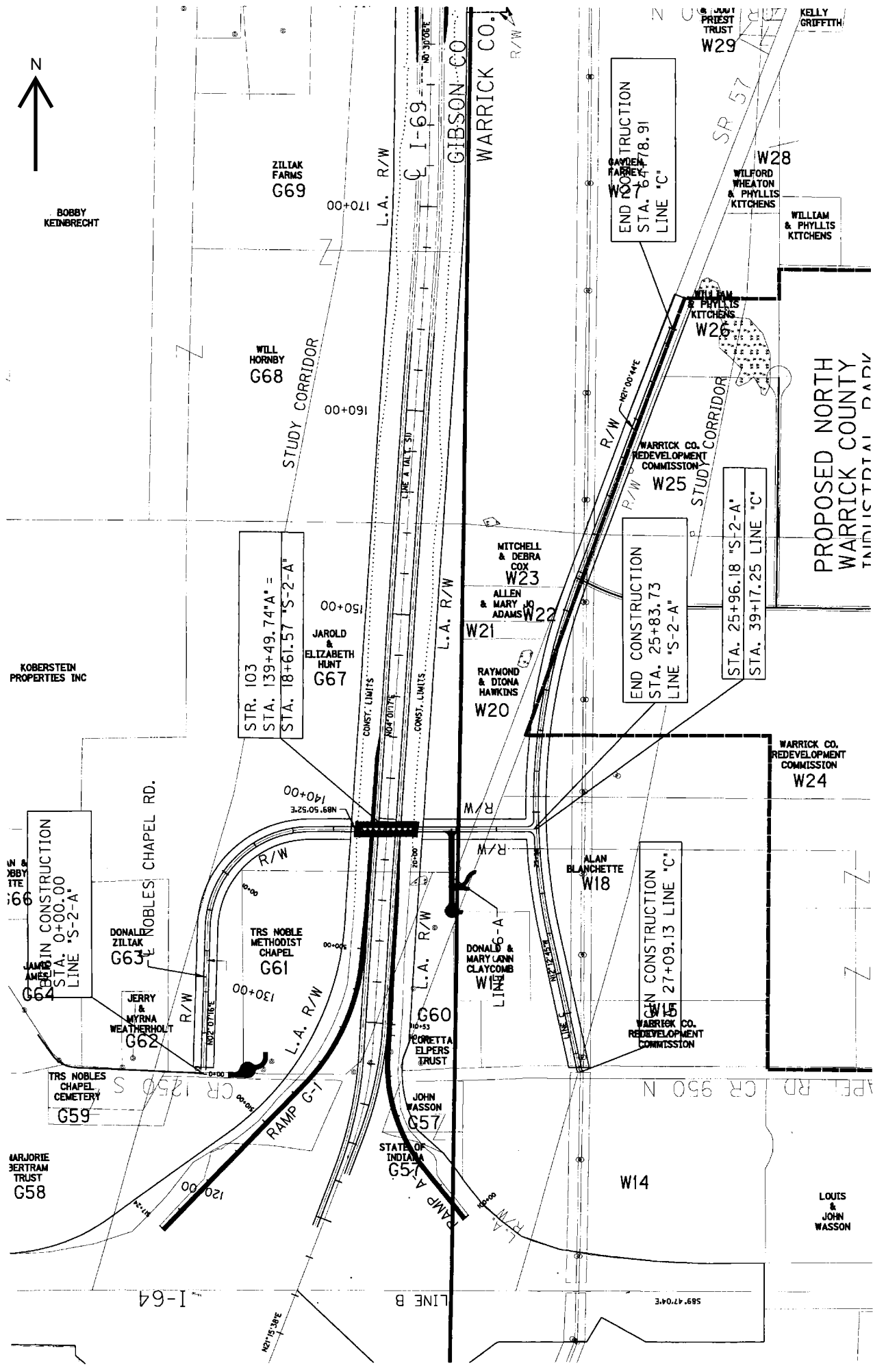
INDIANA  
DEPARTMENT OF TRANSPORTATION  
CROSS SECTIONS  
I-69 - PREFERRED ALTERNATIVE

VERTICAL SCALE	1"=4'	DESIGNATION	
PLAN SCALE	1"=40'	DATE	
COUNTY	CLAY	SHEET	1

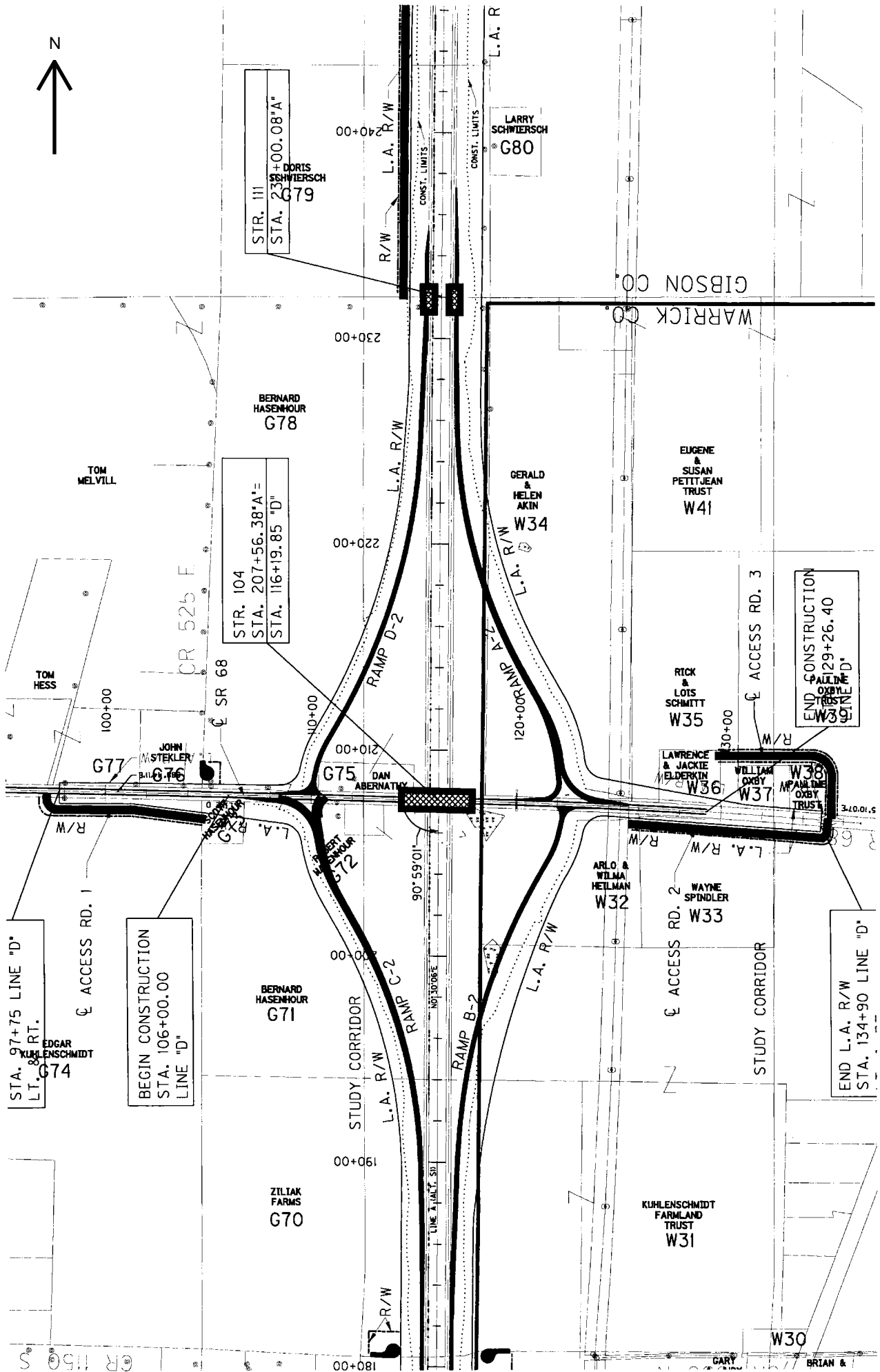


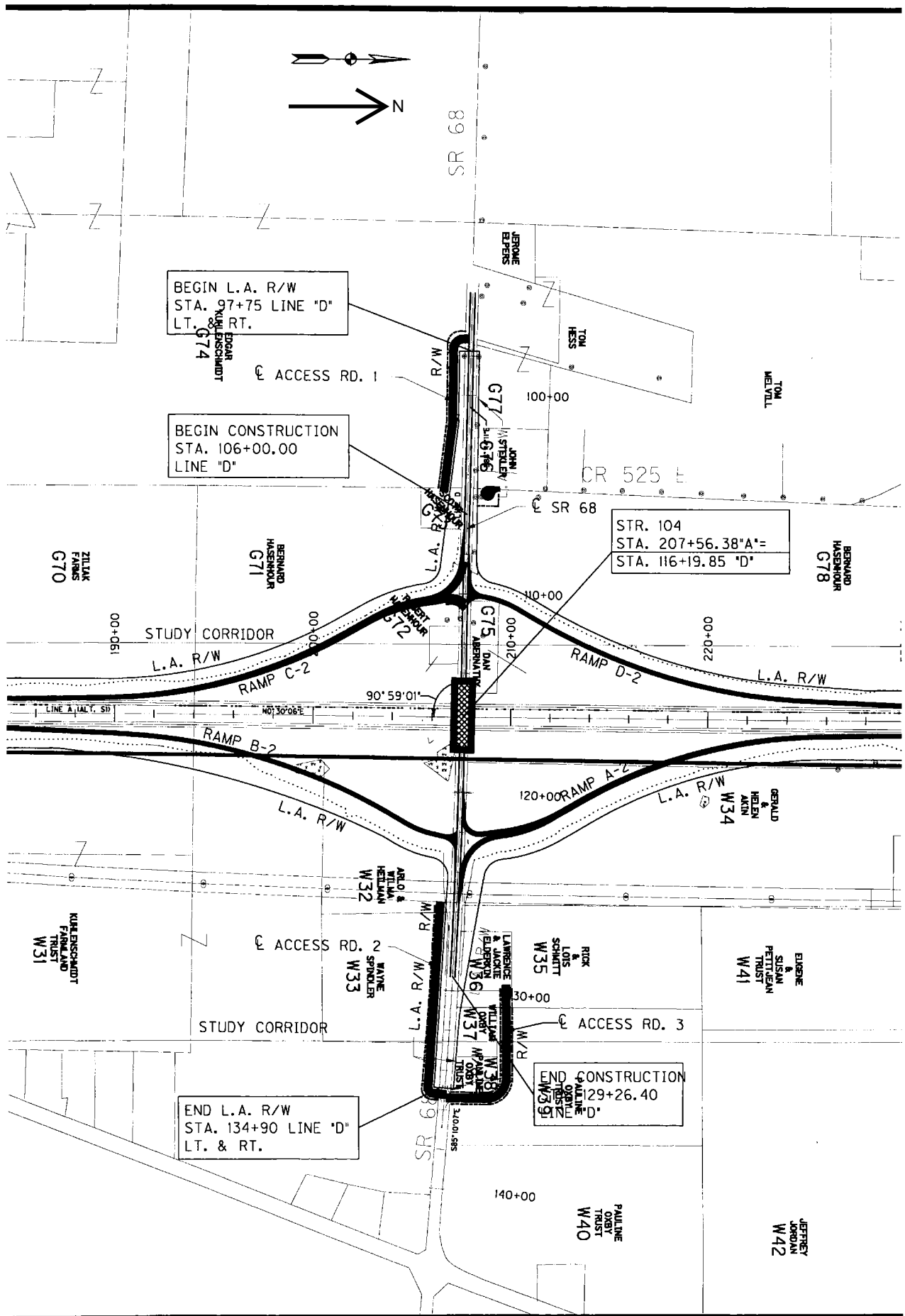
# **401 WQC APPLICATION ATTACHMENT #10**

**Property Boundary Maps**

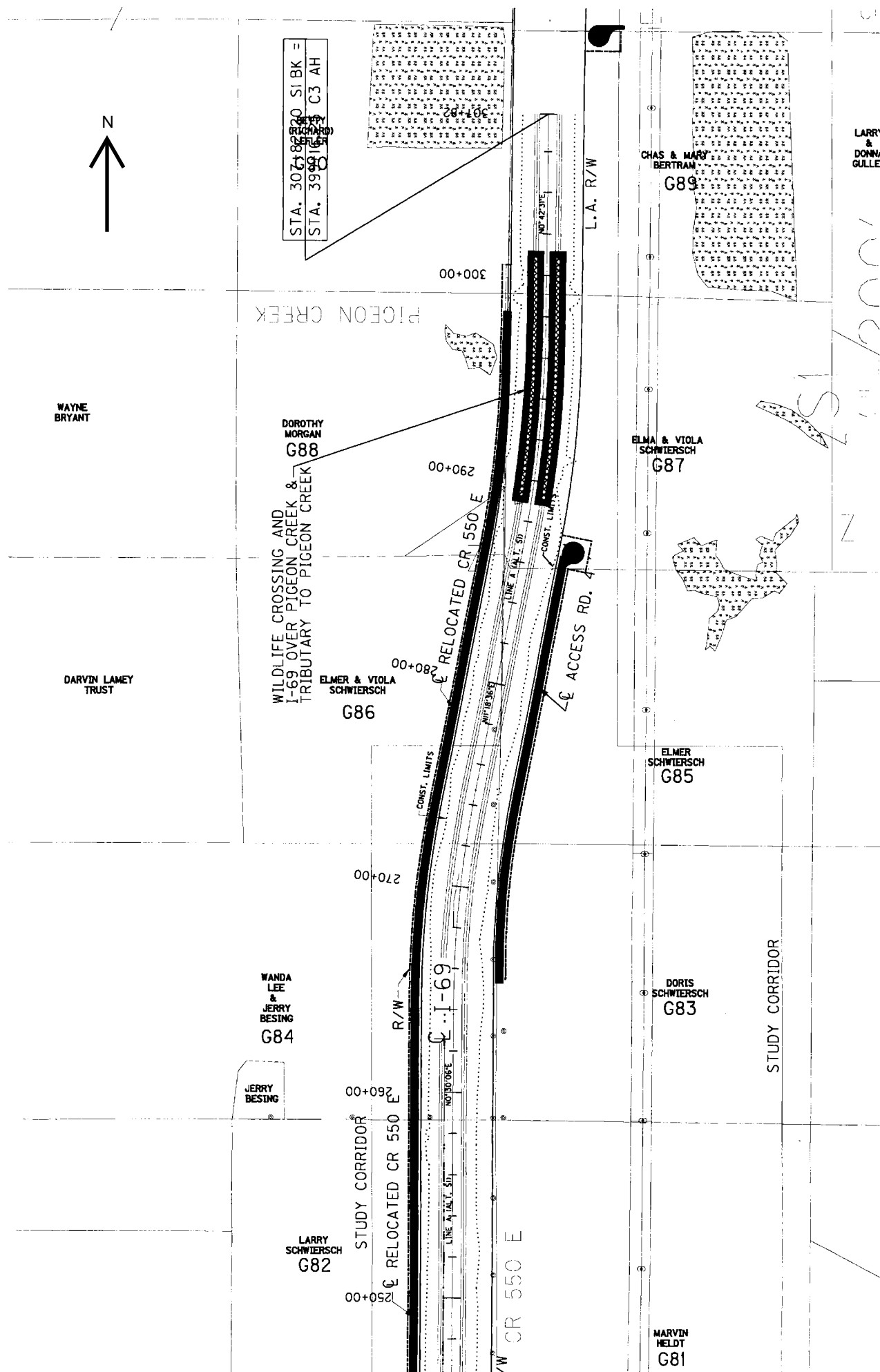


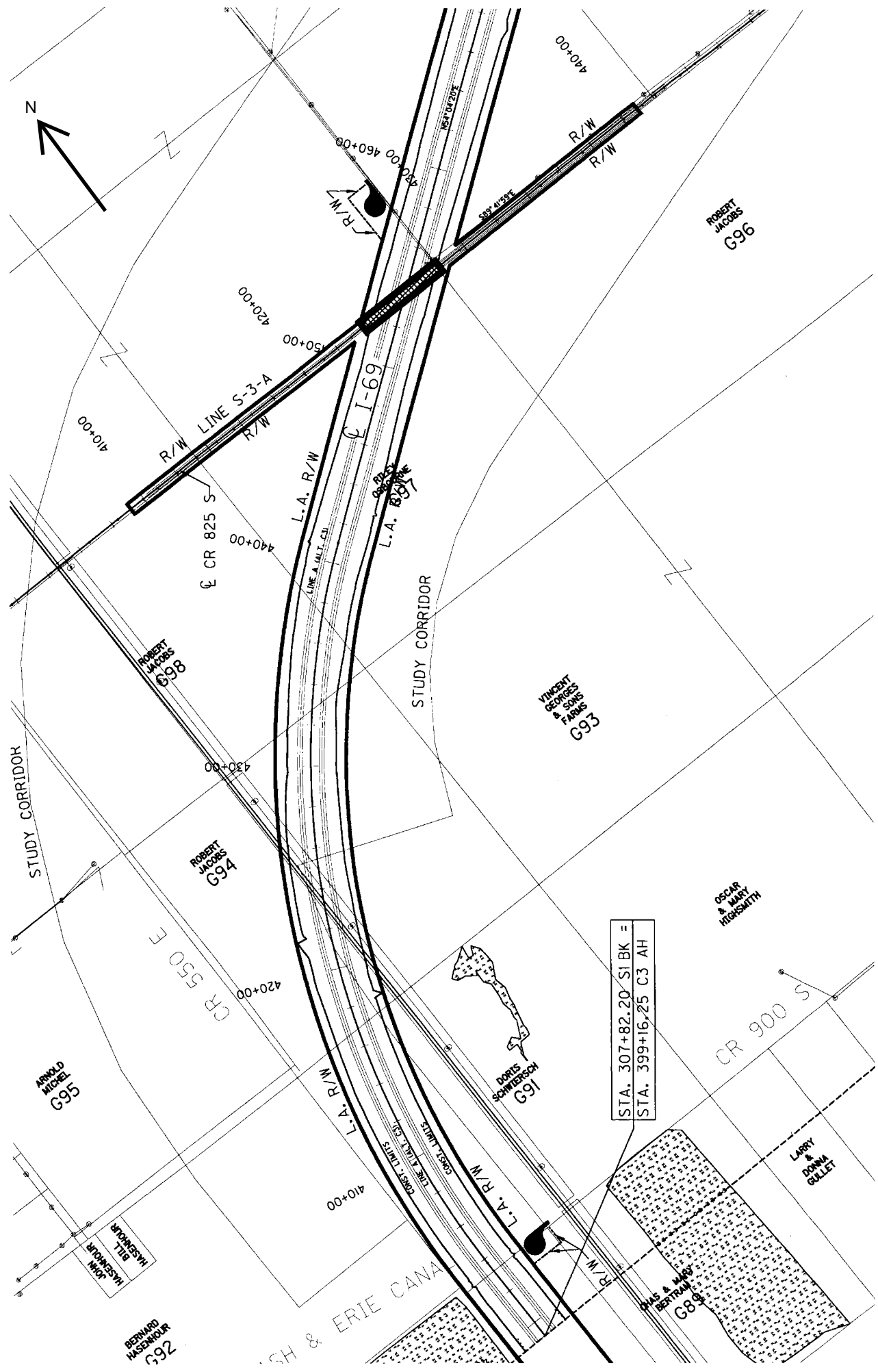




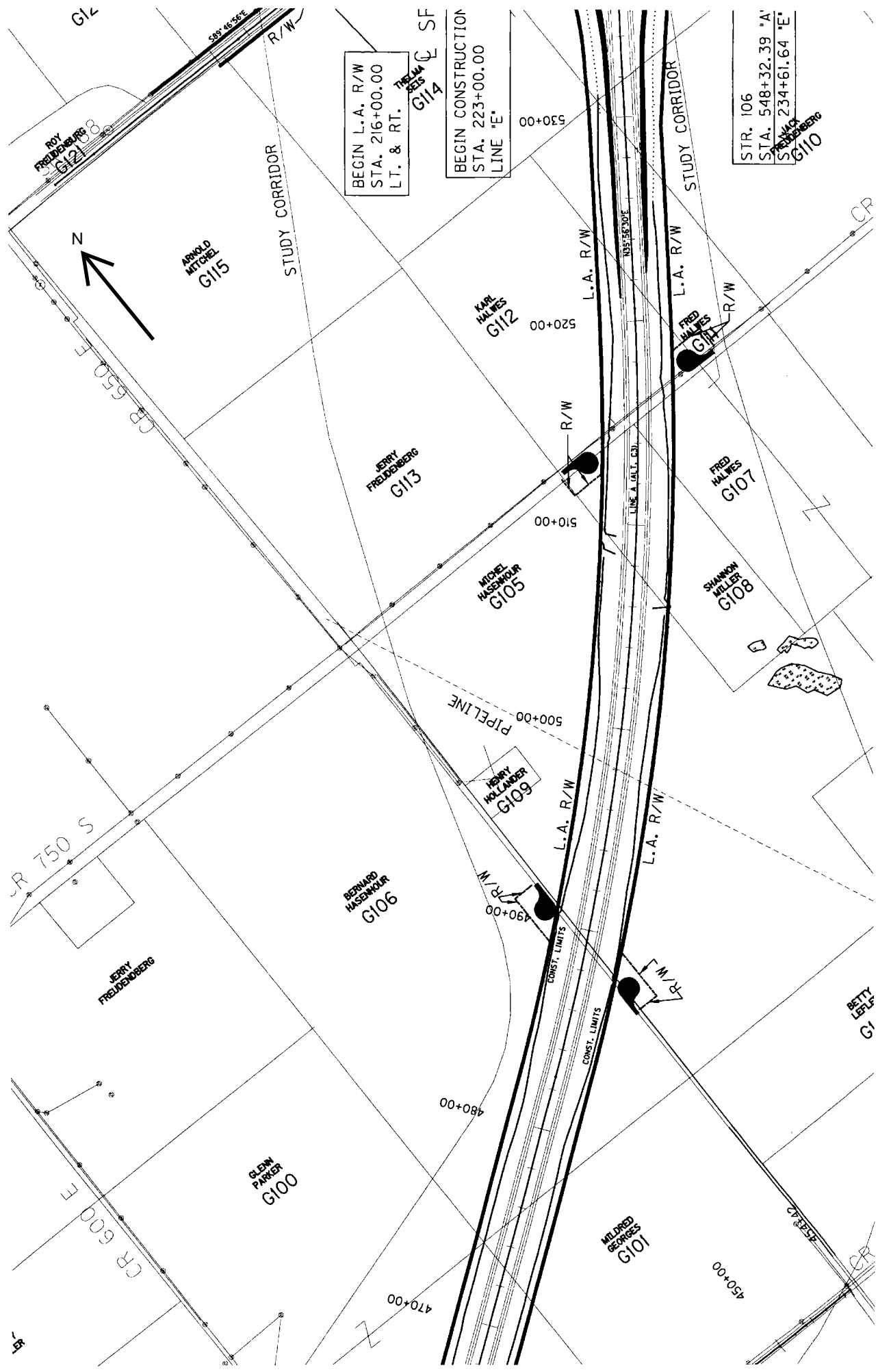


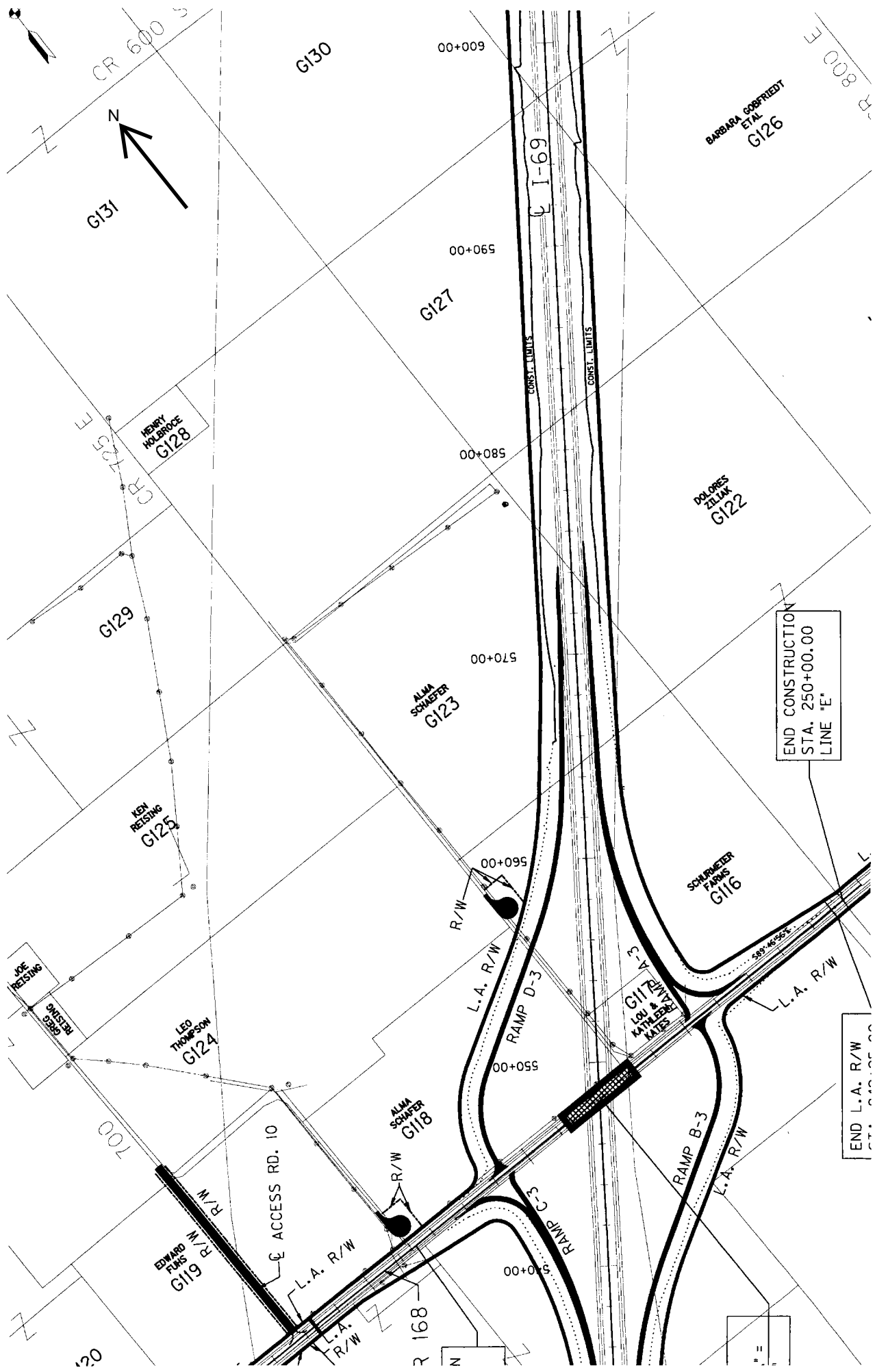




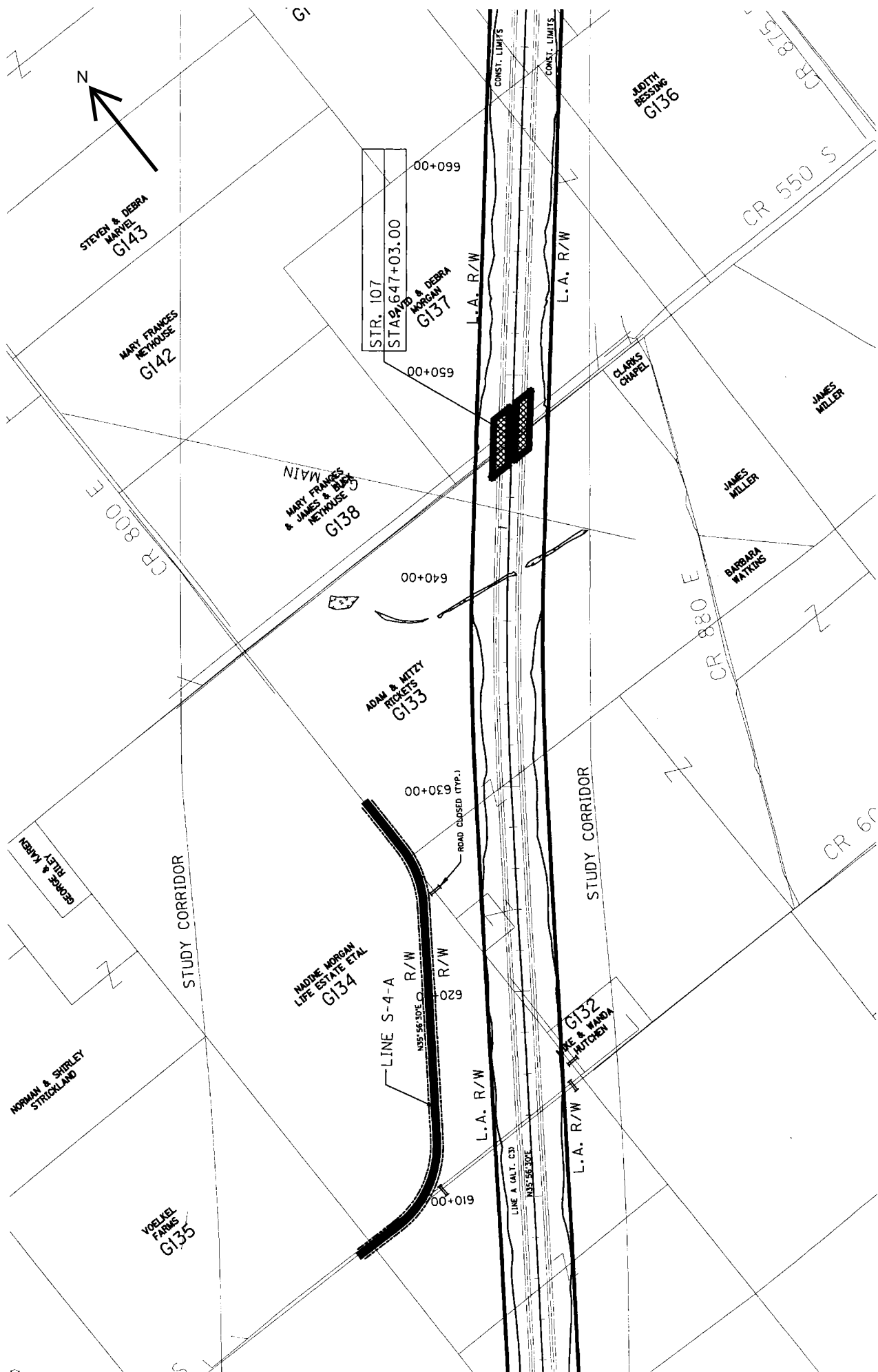


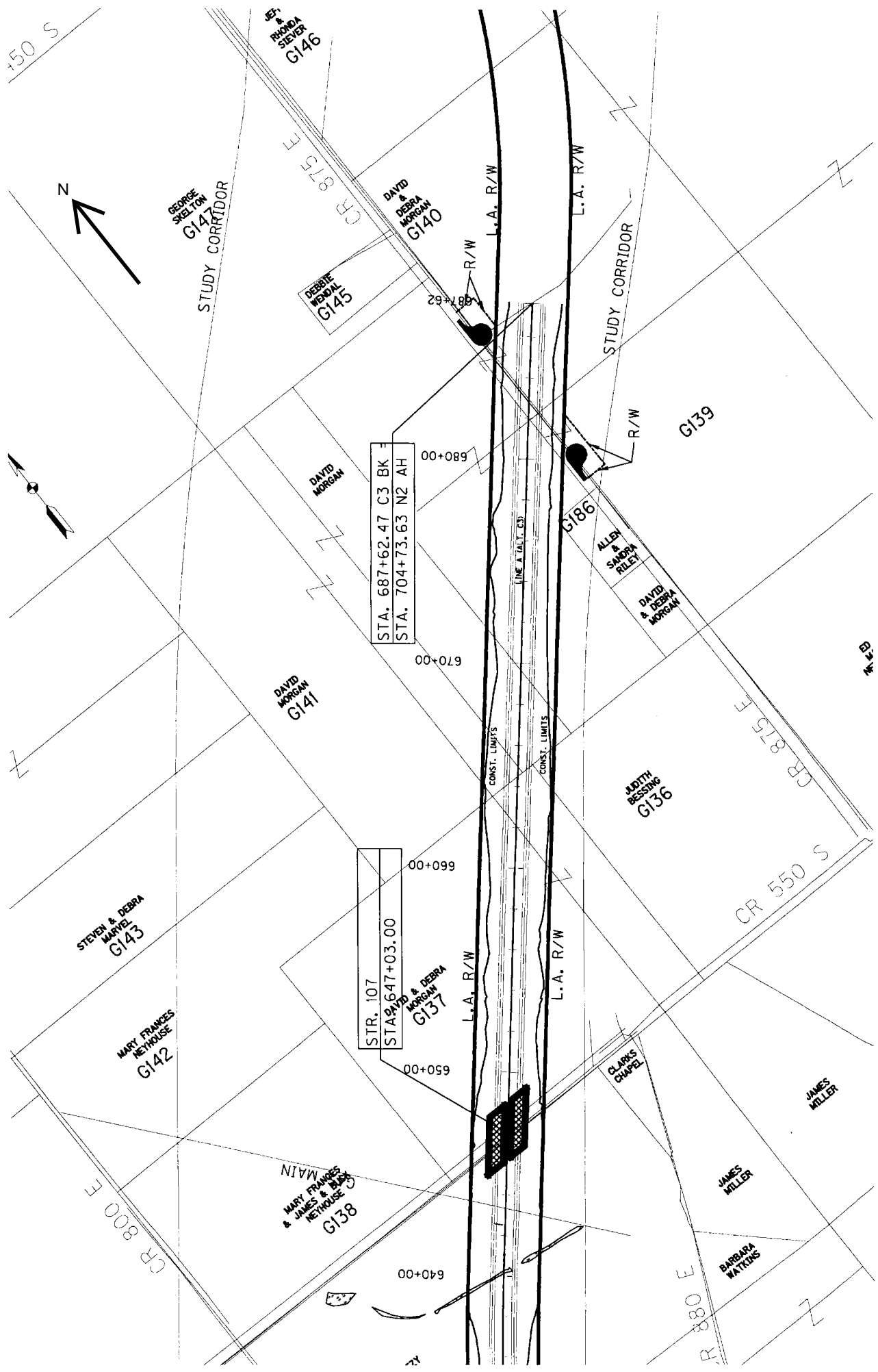












150 S

N

GEORGE SHELTON  
G147

STUDY CORRIDOR

JEN & RONDA SEEVER  
G146

CR 875 E

DAVID & DEBRA MORGAN  
G140

DEBBIE WEDAL  
G145

STA. 687+62.47 C3 BK F  
STA. 704+73.63 N2 AH

DAVID MORGAN

DAVID MORGAN  
G141

G186

ALLEN & SANDRA RILEY

DAVID & DEBRA MORGAN

JUDITH BESSING  
G136

CR 875 E

CR 550 S

STEVEN & DEBRA MARVEL  
G143

MARY FRANCES WEHOUSE  
G142

STR. 107  
STA. 647+03.00

DAVID & DEBRA MORGAN  
G137

MARY FRANCES WEHOUSE & JAMES & BARBARA  
G138

CLARK'S CHAPEL

JAMES MILLER

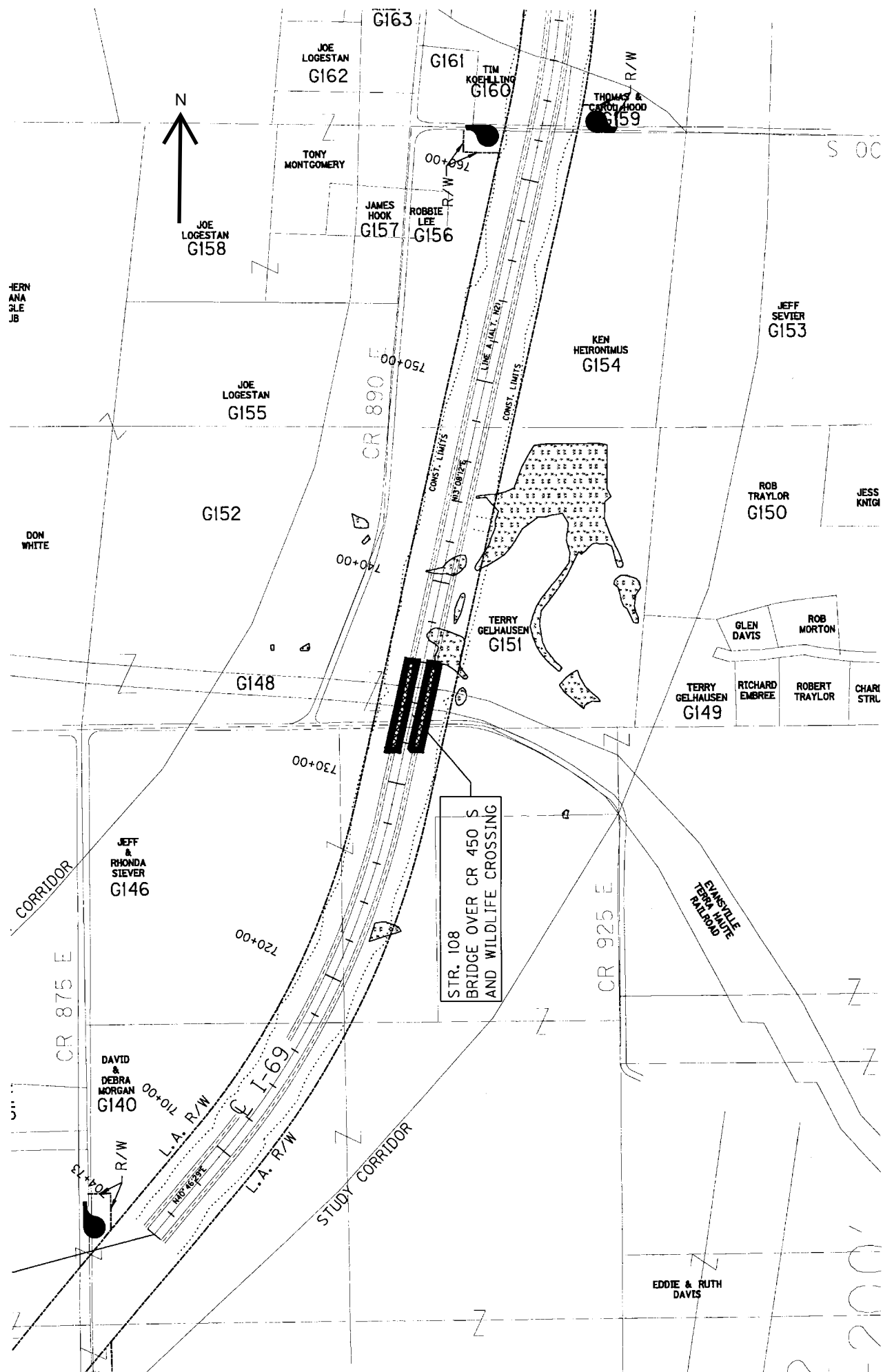
JAMES MILLER

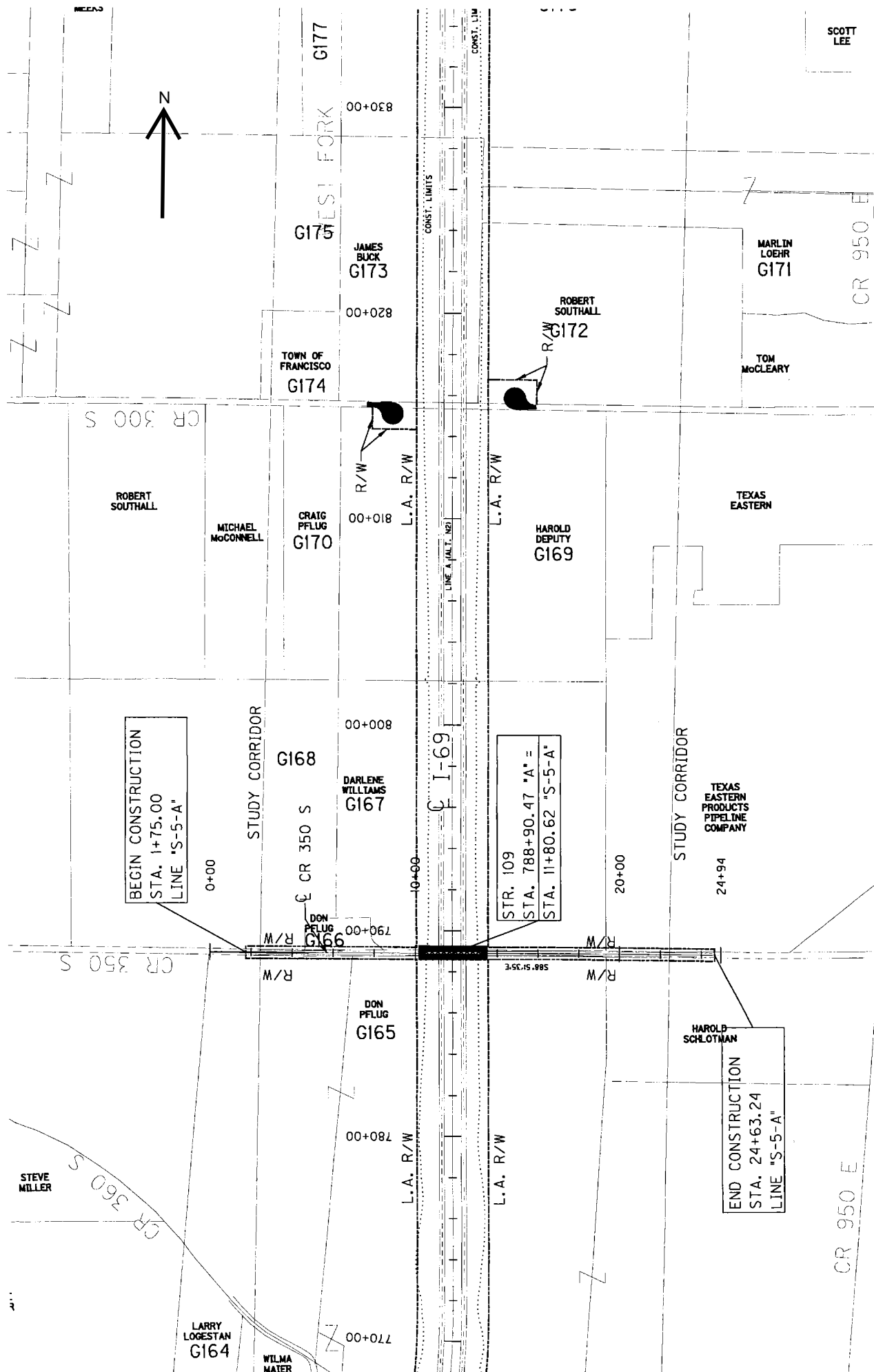
BARBARA WATKINS

CR 800 E

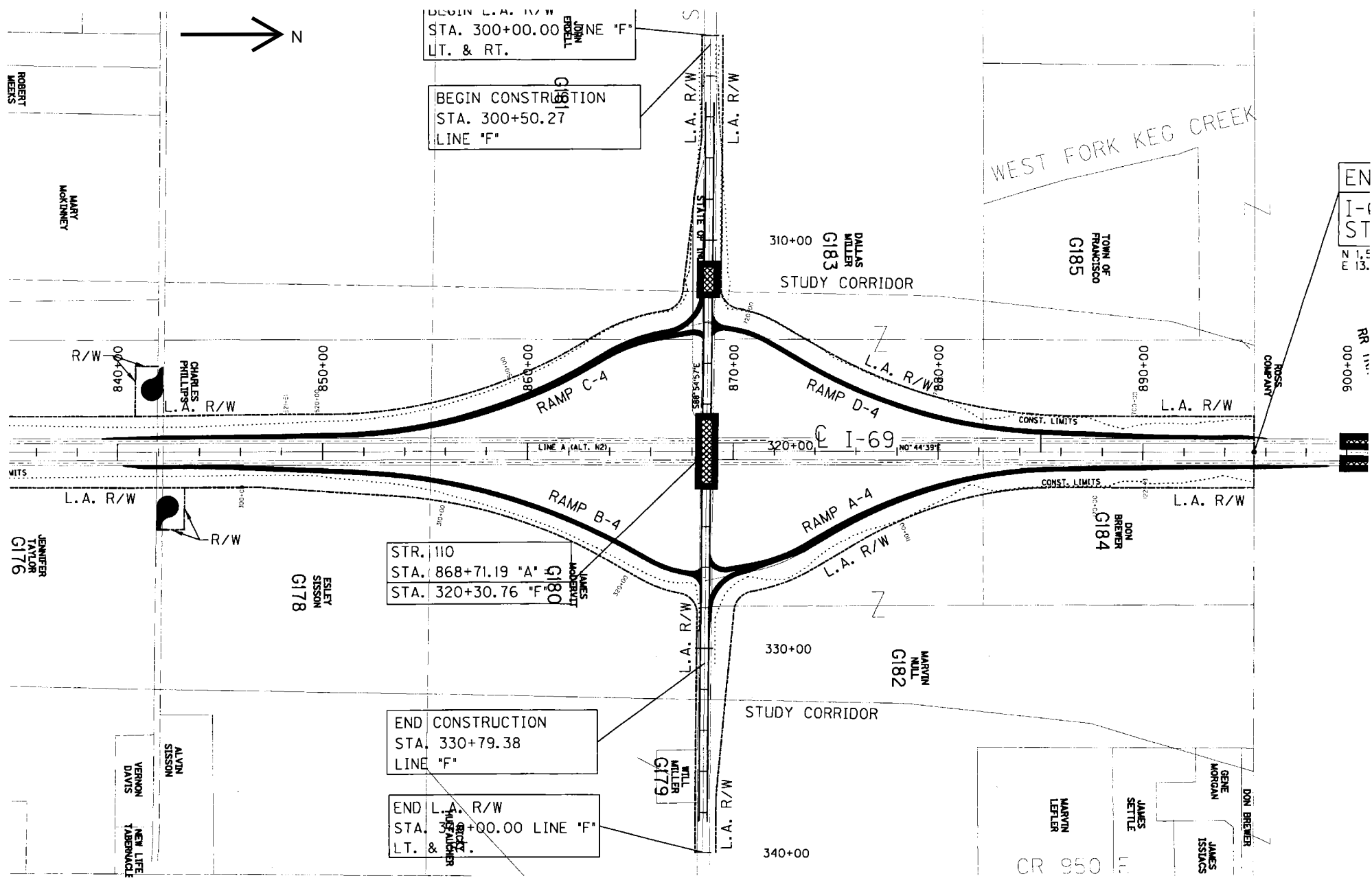
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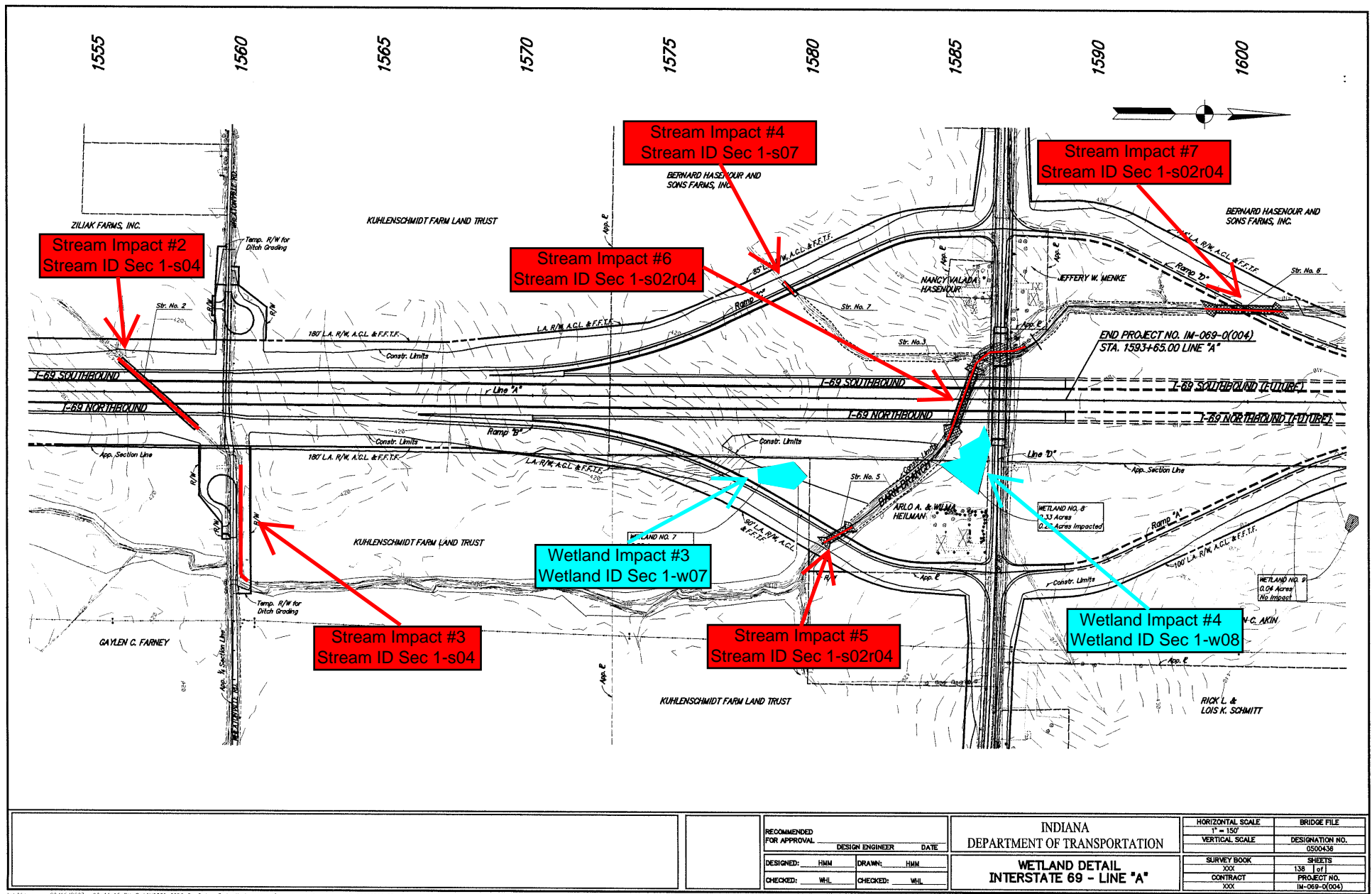


# **401 WQC APPLICATION ATTACHMENT #11**

**Project Plan Sheets Showing Water  
Resource Impact Locations**





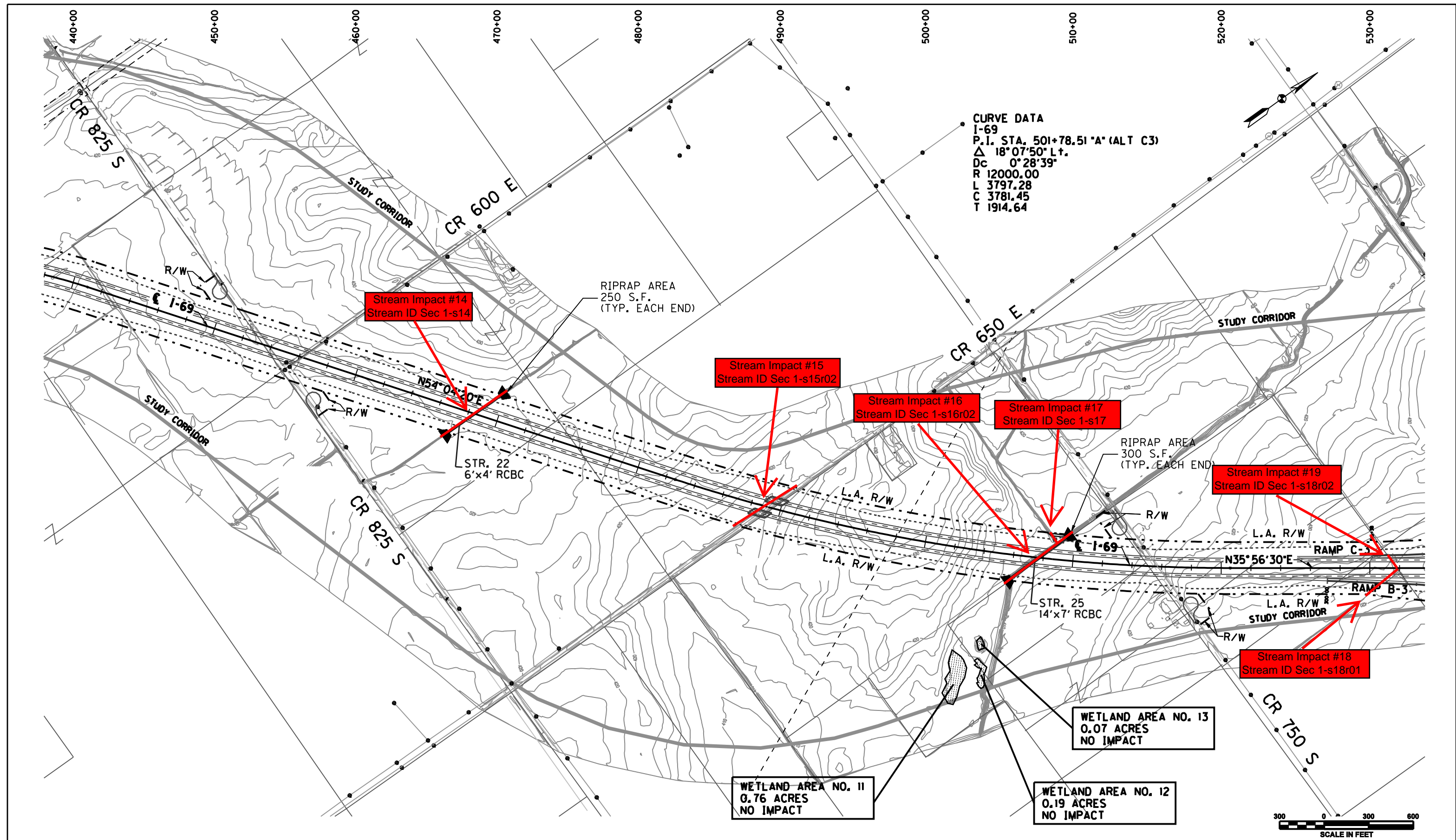






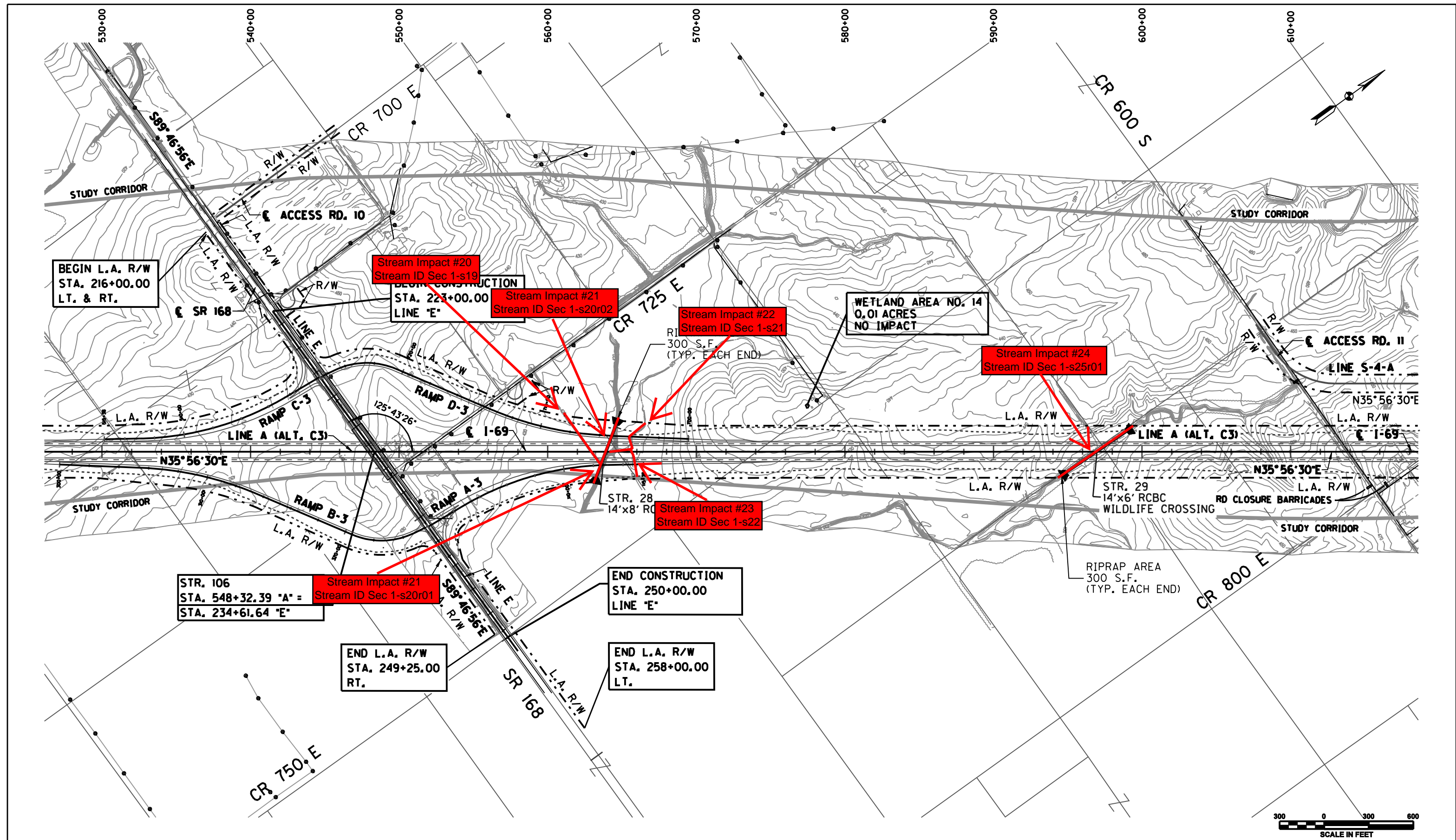






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						DESIGNATION	
				SURVEY BOOK		SHEETS	
				CONTRACT		R 11 of 29 PROJECT	
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		DESIGNED: MAH		DRAWN: MAH			
		CHECKED: RW		CHECKED: RW			



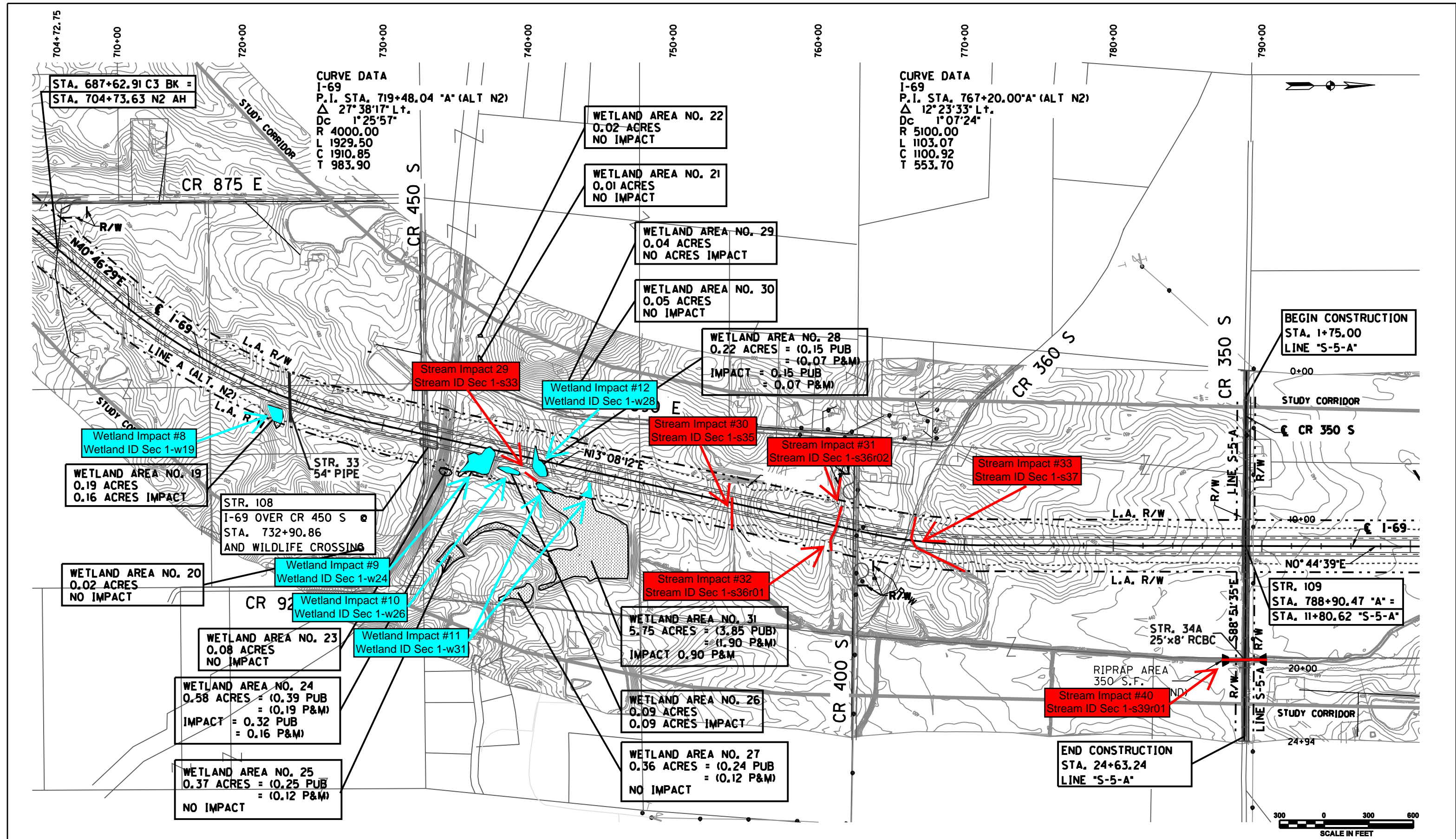


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				CONTRACT		R 13 of 29 PROJECT	
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				DESIGN ENGINEER		DATE	





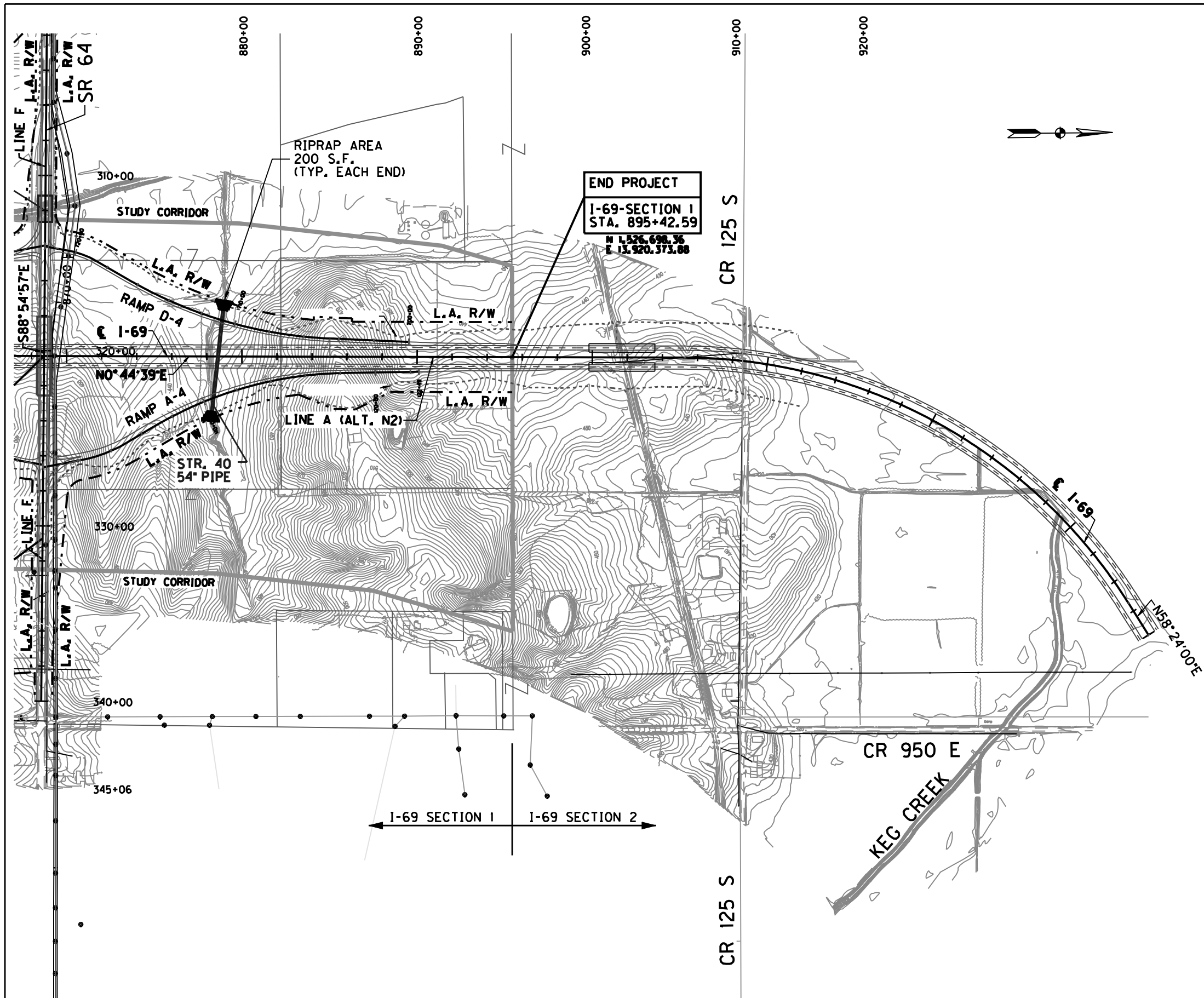




		RECOMMENDED FOR APPROVAL _____		INDIANA DEPARTMENT OF TRANSPORTATION	SCALE 1"=600'	BRIDGE FILE
		DESIGN ENGINEER _____ DATE _____				DESIGNATION
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		CHECKED: _____ RW _____	CHECKED: _____ RW _____		CONTRACT	PROJECT







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					DESIGNATION
				SURVEY BOOK	SHEETS R 24 of 29
				CONTRACT	PROJECT
		RECOMMENDED FOR APPROVAL	DESIGN ENGINEER	DATE	
		DESIGNED: MAH	DRAWN: MAH		
		CHECKED: RW	CHECKED: RW		



# **401 WQC APPLICATION ATTACHMENT #12**

**US Army Corps of Engineers  
Jurisdictional Determination Letter**

103-0001-1PL

**DEPARTMENT OF THE ARMY**  
U.S. ARMY ENGINEER DISTRICT, LOUISVILLE  
CORPS OF ENGINEERS  
P.O. BOX 59  
LOUISVILLE, KENTUCKY 40201-0059

August 17, 2007

Operations Division  
Regulatory Branch (North)  
ID No. LRL-2007-1043-asb

Ms. Michelle Hilary  
Indiana Department of Transportation  
Environmental Assessment Section  
Government Building North, Room N848  
100 North Senate Avenue  
Indianapolis, Indiana 46204-2249

Dear Ms. Hilary:

This is in regard to your Waters of the United States Jurisdictional Determination Report, dated June 25, 2007, and your letter addressing the Report received on August 17, 2007, for Section 1 of the proposed Interstate 69 project (Des No. 0300377). Section 1 of the project runs for approximately 13 miles from the I-64/State Road 57 interchange to State Road 64 in Vanderburgh, Gibson, and Warrick Counties in Indiana.

Based on a review of the submitted information and information obtained during on-site inspections of the project corridor by Corps staff, we have determined that the corridor contains "waters of the United States," including jurisdictional wetlands. This includes 770 linear feet (LF) of perennial stream; 10,615 LF of intermittent stream; 3,885 LF of ephemeral stream; 1.35 acre of wetland; and 1.1 acre of open water.

This determination is based on the presence of (1) one or more tributaries (stream channels, man-made conveyances, lakes, ponds, rivers) that eventually drain or flow into navigable or interstate waters; and (2) wetlands adjacent to navigable or interstate waters, or that eventually drain or flow into navigable or interstate waters through a tributary system that may include man-made conveyances such as ditches or channelized streams. Furthermore, this jurisdictional determination is valid for a period of five years from the date of this letter unless new information warrants revision of the determination before the expiration date.

If you have any questions concerning this matter, please contact this office at the above address, ATTN: CELRL-OP-FN, or by calling Amy S. Babey at (502) 315-6691. A copy of this letter will be sent to your agent. Any correspondence should reference the assigned ID Number indicated above.

Sincerely,

**RECEIVED**

ORIGINAL SIGNED

AUG 21 2007

**BLA - EVANSVILLE**

James M. Townsend  
Chief, Regulatory Branch  
Operations Division

Enclosure



ADDRESS FOR COPY

Mr. Jeremy Kieffner  
Bernardin Lochmueller & Associates, Inc.  
6200 Vogel Road  
Evansville, IN 47714



INDIANA DEPARTMENT OF TRANSPORTATION

100 North Senate Avenue

Room N758

Indianapolis, Indiana 46204-2216

(317) 232-5533

FAX: (317) 232-0238

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MITCHELL E. DANIELS, JR., Governor

KARL B. BROWNING, Commissioner

Writer's Direct Line

(317) 232-5417

Amy S. Babey  
Senior Project Manager/Biologist  
PO Box 59  
Louisville, KY 40201

Re: I-69 Evansville to Indianapolis, Section 1

Dear Ms. Babey:

The Indiana Department of Transportation (INDOT) requests your formal jurisdictional concurrence over the aquatic resources identified in Section 1 of the I-69 project that is proposed to run between Evansville and Oakland City from I-64 to SR 64. INDOT and the Corps of Engineers Louisville District (Corps) have been coordinating on this project since 2002, evaluating potential impacts to "waters of the U.S.", including wetlands, through site visits and data review. The impact evaluations for Section 1 of the proposed I-69 corridor commenced prior to the issuance of the Rapanos guidance (June 5, 2007) and the jurisdictional report (Report) for Section 1 dated June 28, 2007 has been submitted to your office.

In the Report, INDOT has identified numerous streams (totaling 15,270 linear feet), wetlands (totaling 1.35 acres), and open water areas (totaling 1.1 acres) which our respective staffs previously agreed to be "waters of the U.S." INDOT is willing to presume that each of the areas remains jurisdictional in light of the Rapanos guidance and is subject to the Clean Water Act permitting requirements. Additionally, INDOT is aware that it is entitled to an approved jurisdictional determination and the associated appeal rights under 33 CFR 331. Because INDOT presumes jurisdiction over all of the waters outlined in the Report, INDOT will forgo any appeal rights on the I-69 Section 1 Jurisdictional Determination, in order to expedite an approved jurisdictional determination by the Corps.

Finally, INDOT is aware that Corps jurisdiction may result in the requirement for mitigation to compensate for impacts to waters and wetlands within the Section 1 project corridor. INDOT intends to propose a mitigation plan upon submittal of the Department of the Army (DA) permit application that would compensate for each of the jurisdictional waters outlined in the aforementioned Report.

With this in mind, INDOT is requesting that the Corps provide a letter concurring with the Report. We respectfully request your assistance on this matter so that we may proceed with the completion of the Tier 2 Record of Decision and the submittal of the DA permit application.

Please contact me if you have any questions or concerns.

Sincerely,

A handwritten signature in blue ink, appearing to read "Michelle C. Hilary".

Michelle C. Hilary, JD  
Manager, Office of Environmental Services  
Indiana Department of Transportation



# **401 WQC APPLICATION ATTACHMENT #13**

**Conceptual Mitigation Plan  
And  
On-Site Mitigation Efforts**

**Avoidance / Minimization  
and  
On-Site Mitigation Efforts**



## **On-Site Mitigation Efforts**

During the entire history of the I-69 Evansville to Indianapolis Project efforts have been ongoing to avoid and minimize impacts to water resources. Avoidance and minimization efforts in Section 1 during the Tier 1 EIS Phase of the project included narrowing the 2,000 foot corridor to approximately 500 feet in the area of the Pigeon Creek crossing to avoid and minimize the large wetland complexes located to the east and west of the proposed I-69 crossing of Pigeon Creek. Streams were also avoided and minimized during the Tier 1 phase of the project by adjusting the corridor so that many of the streams can be crossed to as close to perpendicular as possible to avoid lengthy stream relocation.

The Tier 2 EIS phase of the project looked at avoidance and minimization of water resources on a more defined basis. During Tier 2 the alternatives were placed within the 2,000 foot corridor in a manner that would avoid and minimize water resources. Section 1 had a total of 8 alternatives. Alternative 4 was identified as the Preferred Alternative. Alternative 4 has the least amount of stream impacts within the proposed right-of-way (15,450 feet) and has the greatest amount of wetland impacts within the proposed right-of-way (1.35 acre). The difference in wetland acres impacted by the 8 alternatives was minimal (1.35 acres – Alternative 4 to 0.80 acre – Alternatives 1 & 5); however, the difference in stream impacts was much broader (15,450 feet – Alternative 4 to 25,405 – Alternative 5). Because of the large difference in stream impacts and such a minimal amount of difference in wetland impacts, the stream impacts weighted more heavily in identifying the Alternative with the least amount of water resource impacts. In addition, during preliminary design of the Preferred Alternative (Alternative 4) minor shifts have been made to further minimize water quality impacts and as the design moves forward into final design more shifts may be made that will reduce the water resource impact even further.

To advance the permitting of Section 1 of the I-69 project at the current design level, 10% was added to all wetland and stream impacts to account for any change in the final design. In addition, the mitigation acreage was based on the 10% added impacts.

Onsite mitigation efforts will include structures that will allow for a natural channel stream bottom at locations that showed aquatic and/or terrestrial habitat connections across the proposed roadway. The natural channel structures (i.e., 3-sided box culvert or oversized 4-sided box culvert depressed at least 1-foot below the natural stream channel) will be placed at the following stream impact locations:

Stream Impact #13 – Structure #21  
Stream Impact #16 – Structure #25  
Stream Impact #21 – Structure #28  
Stream Impact #24 – Structure #29  
Stream Impact #25 – Structure #30  
Stream Impact #27 – Structure #31  
Stream Impact #40 – Structure #34A

In addition to the use of structures that will accommodate a natural stream channel bottom, bio-engineering will be utilized, where appropriate and reasonable to limit the amount of riprap placed along the banks and in the stream channels for stabilization. If riprap is utilized for stream bank stabilization, it will be extended below the ordinary high water elevation to provide additional aquatic habitat.

# **Conceptual Mitigation Plan**



## **I-69 Evansville to Indianapolis Section 1 Tier 2 Conceptual Mitigation Plan**

The following Conceptual Mitigation Plan has been developed to offset potential impacts to wetlands, streams, and forests by the proposed Section 1 of the I-69 Project. Section 1 of the I-69 project begins just south of the I-164/SR57/I-64 interchange and ends just north of SR 64 west of Oakland City. This mitigation plan is conceptual compensation for probable wetland, stream, and forest impacts caused by this project.

### **I. Introduction**

Wetland, stream, and upland forests impacts for Section 1 of the I-69 Project have been identified from field reconnaissance and supplemented with project specific planimetric and topographic maps, USGS maps, aerial photographs, National Wetland Inventory (NWI) maps, and Soil Survey maps. All wetland impacts were delineated using the 1987 Army Corps of Engineers Wetland Delineation Manual and the quality of these wetlands was assessed using the Indiana Wetland Rapid Assessment Protocol (InWRAP). The stream impacts were assessed for stream habitat quality using either the Quality Habitat Evaluation Index (QHEI) or the Primary Headwater Habitat Evaluation Index (HHEI) depending on the size of stream being impacted. Forest impacts were identified using the United States Department of Agriculture's definition of forests.

Section 1 of the I-69 Project is anticipated to impact approximately 1.18 acres of wetlands, of which 1.16 acres are palustrine emergent wetlands and 0.02 acre is palustrine forested wetlands. The InWRAP assessments completed on these wetlands indicated the wetlands impacted by Section 1 were fair to poor quality. Replacement ratios for palustrine forested wetlands are typically 3:1 to 4:1 (depending on quality) and palustrine emergent wetlands are typically 2:1. Wetland mitigation for Section 1 of the I-69 Project will require approximately 2.4 acres pending detailed coordination with the regulatory agencies (Indiana Department of Environmental Management - IDEM, United States Army Corps of Engineer - USACE, and Indiana Department of Natural Resources - IDNR) during the permitting process. In addition, approximately 0.7 acre of buffers may be needed around the wetland mitigation site. Additional area may be needed for access (ingress and egress) to the mitigation site for construction and monitoring.

Section 1 of the I-69 Project is anticipated to impact approximately 15,573 linear feet of streams, of which approximately 845 linear feet are perennial streams, 10,518 linear feet are intermittent streams, and 4,210 linear feet are ephemeral streams as identified on the USGS maps. The QHEI and HHEI assessments completed on these streams indicated that the streams impacted by Section 1 showed poor to moderate habitat quality. Stream mitigation under this conceptual plan will include approximately 11,850 linear feet of intermittent and/or ephemeral stream channel development planted with wooded riparian corridors (approximately 26 acres) and approximately 6,300 linear feet of existing streams (including over 3090 ft of perennial Pigeon Creek) will be planted with herbaceous filter strips. A total of approximately 18,150 linear feet of stream mitigation will be completed on this site. In addition, on site mitigation (e.g., bridging, oversizing box culverts and use of 3-sided box culverts to maintain a natural substrate, possible bio-engineering for stream bank stabilization, etc.) will be completed in all areas suitable within the Section 1 Preferred Alternative right-of-way to help offset the stream impacts.

The Indiana Department of Transportation (INDOT) made a commitment in the Tier 1 Environmental Impact Statement completed for the entire I-69 Project from Evansville to Indianapolis to replace all upland (non-wetland) forest impacts at a 3:1 ratio. In consultation with the environmental resource agencies, it has been agreed that this mitigation will include preservation as well as reforestation. Reforestation will be completed at a minimum ratio of 1:1 for replacement of all upland forests impacted

by the I-69 project (although more than 1:1 development may be completed). The balance of forest mitigation may be in the form of existing forest preservation at a ratio of up to approximately 2:1 (preserved forest to impacted forest). Section 1 is anticipated to impact approximately 27.4 acres of upland forests. This conceptual mitigation plan will include preservation of approximately 29 acres of existing forests and forest development (reforestation of existing agricultural fields) of approximately 96 acres. The total amount of forest mitigation under this conceptual plan will be 125 acres. Approximately 26 acres of this forest mitigation will be riparian habitat planted along the stream channels to be developed within the mitigation site.

## **II. Proposed Mitigation Area**

The proposed mitigation site for Section 1 of the I-69 project is located in Gibson County just south of CR 900 south and east of CR 550 E. The location of the site is as follows: Indiana: Gibson County, Elberfeld Quadrangle, Union Township, T3S, R10W, Southwest Quarter of Section 25. Pigeon Creek flows through the site from the northwest to the southeast (See Attached Figures 1 and 2). The proposed mitigation site is located in the Highland-Pigeon 8-digit watershed and the majority of the site is within the floodplain of Pigeon Creek. Coordination with the current land owners is ongoing regarding the purchasing of a conservation easement on this parcel of land for mitigation purposes of I-69. The mitigation site is approximately 160 acres in size. The Gibson County Surveyor identified 3 legal drains located within the mitigation parcel which include: Pigeon Creek, Besing Lateral, and Stunkel Lateral. All three of these legal drains have a 75 foot legal easement from the top of bank on both sides of the creek. Coordination with the Gibson County Surveyor identified that the 75 foot legal drain easement is required for Pigeon Creek because of its size and drainage area, but both the Besing Lateral and Stunkel Lateral legal drain easements may be narrowed to 35 feet in width. Additional coordination and a legal drainage abatement agreement with the Gibson County Drainage Board will be required to narrow these legal drain easements. Photographs showing the existing conditions of the mitigation site are in Appendix A.

The proposed design of this mitigation site would include the development of approximately 2.4 acres of forested wetlands, 2.5 acres of emergent wetlands, 96 acres of bottomland forests, 12,015 linear feet of stream development (intermittent and/or ephemeral), 6,350 linear feet of grass filters (24 acres) within the legal drain easements of the existing channels within the mitigation site, and 30.4 acres of existing bottomland/wetland forest preservation (See Attached Figures 3 and 4). The reforestation of this parcel will provide an increase in core forest habitat of approximately 60 acres (See Attached Figure 5). These combined mitigation features will create a mosaic of wetland, riparian, and bottomland woods habitat within an area where the majority is currently being farmed in row crop production providing very little natural habitat value.

The soils identified within the mitigation site from the Gibson County Soil Survey consist of Wakeland silt loam and Birds silt loam in the majority of the mitigation site and Stendal silt loam, Hosmer silt loam, and Peoga silt loam to a lesser extent (See Attached Figure 3). These soils are all identified as frequently flooded and poorly to somewhat poorly drained with the exception of the Hosmer silt loam, which occupies only a small slope area of higher elevation on the southwest corner of the site. Birds and Peoga silt loams are classified as hydric soils in Gibson County, while the Stendal and Wakeland are identified as having hydric inclusions. The NWI maps for the Elberfeld quadrangle identified the existing forest areas as palustrine forested wetlands and palustrine scrub/shrub wetlands to a lesser extent (See Attached Figure 3). Development of this mitigation site for the Section 1 impacts will connect the two isolated NWI mapped wetlands in the northeast portion of the mitigation site to the larger block of NWI mapped forested wetland area in the southeast portion of the mitigation site creating approximately 60 acres of core forest habitat.



The site is largely within the floodplain of Pigeon Creek, with floodplain mapping showing only small portions on the extreme northeast and southwest corners outside of the floodplain limits (see Figure 3). Two higher elevation areas in the southwestern portion of the site are completely encompassed by the floodplain, but are shown to be out of the floodplain. Testimony from the current land owners has confirmed that large portions of the site flood regularly

The forested wetland mitigation area may be planted with hard mast producing species such as pin oaks, swamp white oaks, swamp chestnut oaks, overcup oaks, shellbark hickories, and northern pecan, as well as bald cypress. The emergent wetland mitigation area may be seeded with an emergent wetland seed mix or sedge meadow seed mix, including numerous grass and forb species. The non-wetland bottomland woods reforestation area may be planted with pin oaks, bur oaks, shumard oaks, shellbark hickories, sugarberry, and sweetgum with an understory of common spicebush, elderberry, gray dogwood, and red mulberry. All of the species proposed for planting in the non-wetland bottomland woods mitigation area are from the pre-approved IDNR tree list.

This proposed mitigation site may have approximately 12,015 linear feet of stream channels developed within the mitigation site connecting the different habitat areas and providing diversity of hydrologic regime and habitat. One of the unique factors of this mitigation site is the presence of the old Pigeon Creek channel before it was channelized (See Attached Figures 4 and 5). One of the items within the proposed concept of this mitigation site is excavation of a portion of the old Pigeon Creek channel and reconnection with active drainage channels. The areas adjacent to the proposed stream development locations may be planted with pioneer species such as red maples, black willows, green ash, eastern cottonwood, and sycamores to establish a riparian corridor at a faster rate to provide shading of these channels. The stream channels proposed for development will be seeded with a swale seed mix to help stabilize the banks, and additional habitat features may be incorporated as appropriate.

### **III. Goals**

The goal of this mitigation is to create wetlands, streams, and upland forests which not only mitigate the environmental impacts caused by Section 1 of the I-69 project, but enhance the environment and water quality of the Highland Pigeon watershed. Pigeon Creek is identified as an impaired stream in Vanderburgh County downstream of the proposed mitigation site. This mitigation design concept could help to improve the downstream water quality by taking land out of agricultural use and also provided a filtration of surface water runoff from adjacent lands entering Pigeon Creek. This mitigation concept will also help to decrease flooding downstream by providing a storage area for floodwaters greater than what currently exists. This mitigation area should accomplish these goals and emphasize natural wetland, stream, and bottomland forest communities that use native trees and herbaceous vegetation. It is anticipated that target functions and values for the mitigation site may be achieved within a 3 to 5 year time frame, including flood storage and wildlife use; however, woody species will require a longer time frame to achieve their complete functions. Complete habitat development may take 20 – 30 or more years for woody species to mature. Education and research opportunities may be available through the life of the project.

The mitigation area will replace, with a net gain, flood retention, ecological functions, and wildlife habitat values of the impacted wetland and stream areas. Converting farm fields connected to existing bottomland/wetland complexes will provide an opportunity for: (1) a higher “carrying capacity” for wildlife, (2) colonization by TES species; (3) potential habitat for State and Federal listed animal species such as the Indiana bat, bald eagle, evening bat, and possibly others; (4) habitat for gamebirds and passerines; and (5) habitat for many reptiles, amphibians, and mammals. Environmental benefits will be significant upon the development of the mitigation site. As the mitigation site matures, which may take more than 5 years, these benefits will continue to increase.

#### Types, Functions, and Values of Impacted Existing Wetlands

This project will impact approximately 1.18 acres of jurisdictional wetlands (1.16 acres palustrine emergent wetlands and 0.02 acre palustrine forested wetland), 15,573 linear feet of streams (845 perennial, 10,518 intermittent, and 4,210 ephemeral), and 27.4 acres of upland forests. The wetland impacts caused by this project were identified using the Army Corps of Engineers Wetland Delineation Manual criteria. The primary functions and values of the wetland, stream, and upland forests impact sites are flood storage and to a lesser extent, water filtration and wildlife habitat.

#### Types, Functions, and Values of the Proposed Mitigation Site

The potential mitigation area is primarily farm fields, connected with existing NWI mapped forested and scrub/shrub wetlands and Pigeon Creek. INDOT would purchase lands in fee simple title or as conservation easements for the mitigation site to replace the lost functions and values of the impacted wetlands, streams, and forests within the right-of-way of Section 1 of the I-69 project. Coordination with the current land owners identified that they would be interested in selling a conservation easement on the 160 acre parcel of land that is being identified as the proposed mitigation site for Section 1. The farm fields purchased for this mitigation would be converted, for the most part, to bottomland forests, riparian forests, and streams and to a lesser extent forested and emergent wetlands. Buffer strips may be located around the wetland mitigation areas to act as filters for runoff from adjacent land. Hydrology for the mitigation site would be from the frequent flooding and precipitation runoff from the adjacent lands. The identified mitigation site could anticipate flooding from Pigeon Creek plus local surface runoff. The mitigation site should replace, and improve upon, the flood storage, water filtration, and wildlife functions and values being lost at the impact sites.

### **IV. Mitigation Success Criteria**

A total of 1.18 acres of wetlands, 15,573 linear feet of streams, and 27.4 acres of upland forests were identified within the Preferred Alternative of Section 1 of the I-69 Project. Approximately 2.5 acres of wetland mitigation, 82.2 acres of upland forests mitigation, and 15,573 linear feet of stream mitigation will be required for this project. This Conceptual Mitigation Plan has a greater than 3:1 replacement ratio for forested wetland impacts, greater than 2:1 replacement ratio for emergent wetland impacts, greater than 3:1 replacement ratio for upland forest impacts and at least a 1:1 mitigation ratio for stream impacts. A buffer for the wetland mitigation site has been included in this plan. Approximately 0.7 acre of land is included for such a buffer. Buffer requirements may be reduced based on specific site conditions. All wetland, stream, and forest impacts will be mitigated within the same 8-digit watershed or same county as the impacts. Table 1 shows the types, impacts, mitigation ratios, and mitigation acres required for Section 1 of the I-69 Project.



<b>Table 1. Habitat types, Impacts, Mitigation Ratios, Mitigation Required, and Mitigation Being Offered for Section 1 of the I-69 Project.</b>			
<b>Habitat Type</b>	<b>Impacts</b>	<b>Mitigation Ratio</b>	<b>Mitigation Required</b>
Forested Wetlands	0.02 acre	3:1	0.06 acre
Emergent Wetlands	1.16 acres	2:1	2.32 acres
Wetland Buffer	----	-----	0.7 acre
Upland Forests	27.4 acres	3:1	82.2 acres
Streams	15,573 feet	-----	15,573 feet
<b>Total Mitigation Required</b>	<b>28.6 acres 15,573 feet</b>	<b>-----</b>	<b>0.06 acres PFO 2.32 acres PEM 0.7 acres wetland buffer 82.2 acres UPL Forest 15,753 feet of streams</b>
<b>Total Mitigation Being Offered</b>			<b>1.9 acres PFO 3.0 acres PEM 126.4 acres UPL Forest* 27.2 acres riparian** 18,150 feet of streams</b>

\* This mitigation area includes 30.4 acres of existing bottomland/wetland forest preservation, 25 acres of riparian woods planted along the proposed stream channels and 0.7 acre wetland buffer.

\*\* This area is located within the legal drain easements and will be planted with herbaceous vegetation to help filter runoff from adjacent lands.

PEM Palustrine Emergent Wetland

PFO Palustrine Forested Wetland

UPL Upland

## **V. Implementation Plan**

### Rational for Expected Success of Mitigation Area

Reasons for expected success of this mitigation site include the occurrence of unique and high quality habitats within and adjacent to the mitigation site, the presents of existing bottomland/wetland forests, the potential to add core forest habitat, the presents of Pigeon Creek running through the site, and the presence of hydric soils within the mitigation site. This mitigation site is also located within the Indiana bat maternity colony that was identified within Section 1 in the Revised Biological Opinion from the United States Fish and Wildlife Service. This mitigation site would extend the existing habitats within and adjacent to the mitigation site and connect the isolated woods in the northeast portion of the site to the larger woods in the southwestern portion of the site.

### Responsible Parties

The Indiana Department of Transportation would purchase the mitigation site or purchase a conservation easement with a restriction clause on its special use as a mitigation site. Properties will have signs indicating “No Spraying or Mowing”. Monitoring may be completed by INDOT or a contracted environmental consultant.

### Habitat Improvement Structures

Habitat improvement structures may be constructed within the mitigation site. Examples could include bluebird boxes, wood duck boxes, bat roosting structures, raptor nesting platforms, and others.

### Construction Schedule

Site preparation of the mitigation site will occur in a timely manner to allow planting to immediately follow in the spring of the year.

### Monitoring

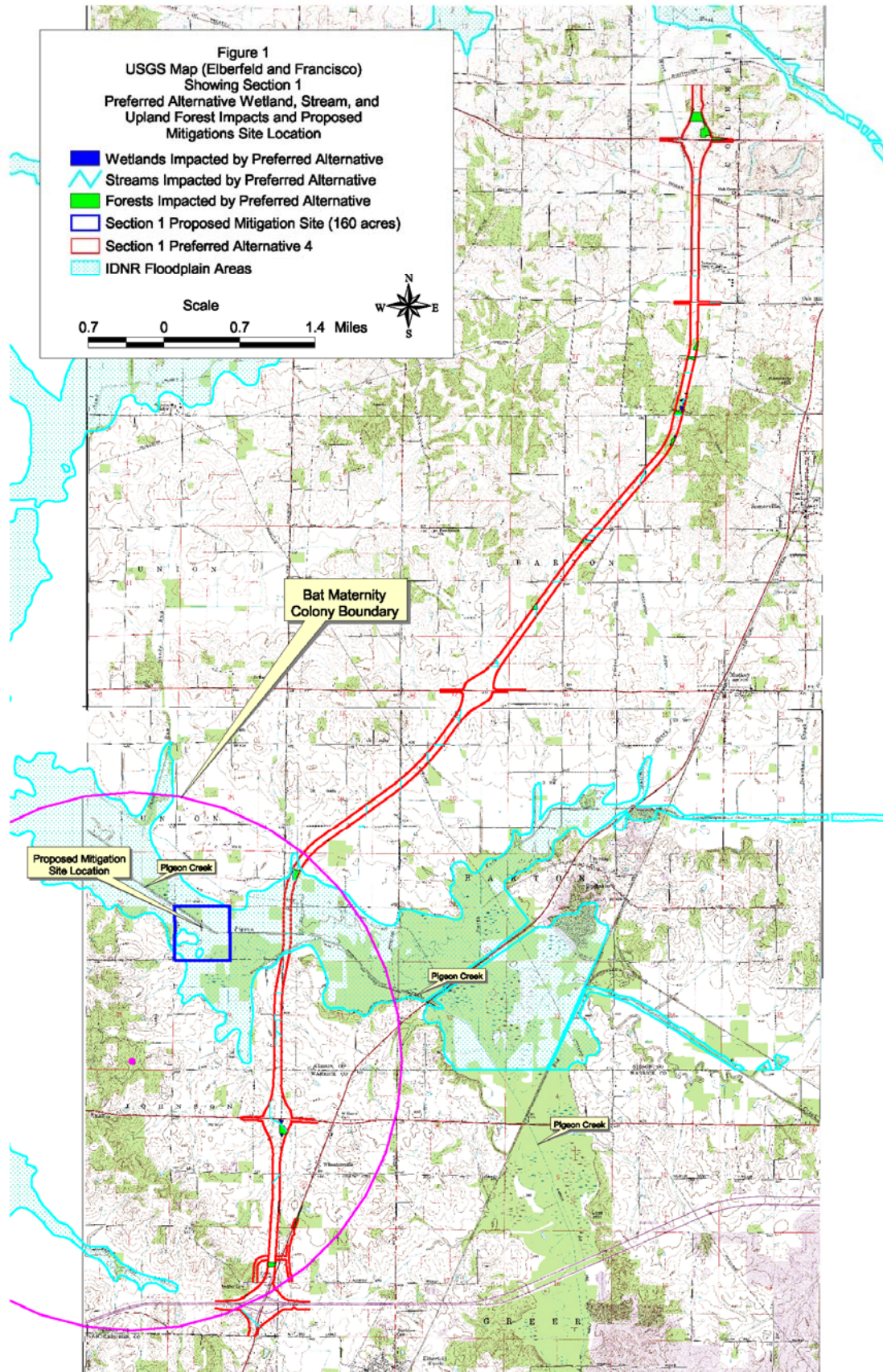
Monitoring will be determined during the permitting process and will follow all monitoring conditions stated in the permits.

## **VI. Summary**

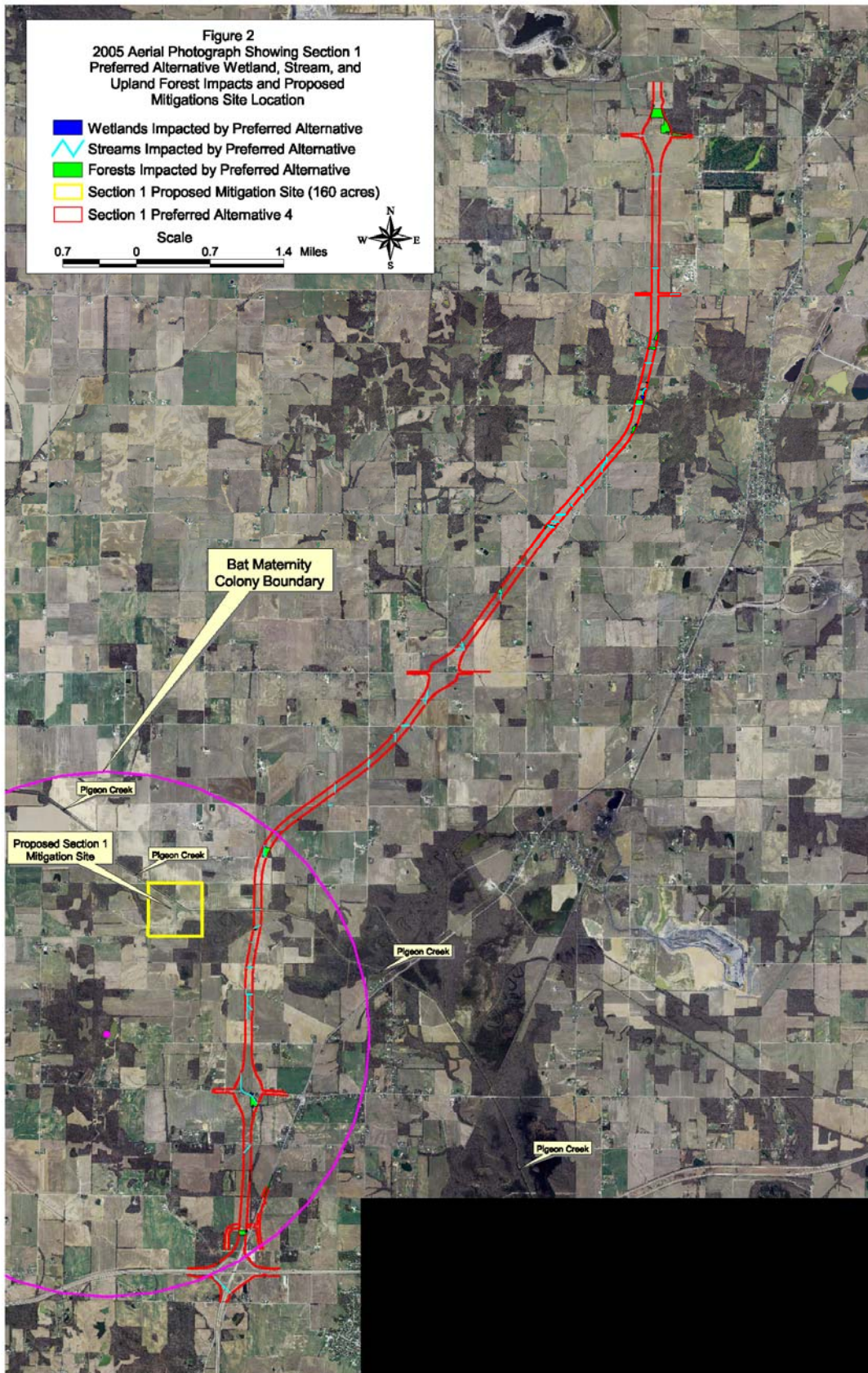
This Conceptual Mitigation Plan purposes to create approximately 5 acres of wetlands for impacts to 1.18 acres of wetlands, 11,850 linear feet of stream channels and 6,300 linear feet of existing stream channel planting for impacts to 15,573 linear feet of stream impacts and 96 acres of upland forest development along with 30.4 acres of existing upland forest preservation for impacts to 27.4 acres of existing upland forests caused by the construction of the Preferred Alternative for Section 1 of the I-69 project in Gibson County, Indiana. Under this plan, forested wetlands would be replaced at a greater than 3:1 ratio, emergent wetlands would be replaced at a greater than 2:1 ratio, streams mitigation would be complete at a minimum of 1:1 ratio, and upland forests would be replaced at a greater than 3:1 ratio. Approximately 160 acres of land would be developed and preserved into a mosaic of wetlands, stream channels, and upland forest habitat.

To offset unavoidable wetland, stream, and upland forest impacts caused by the project, compensatory mitigation will be offered to replace lost habitat within the same watershed or county. Replacement of habitats at the proposed mitigation site will provide increased wildlife functions and values. The mitigation site will be restricted from other uses to ensure that it remains in a natural condition in perpetuity.

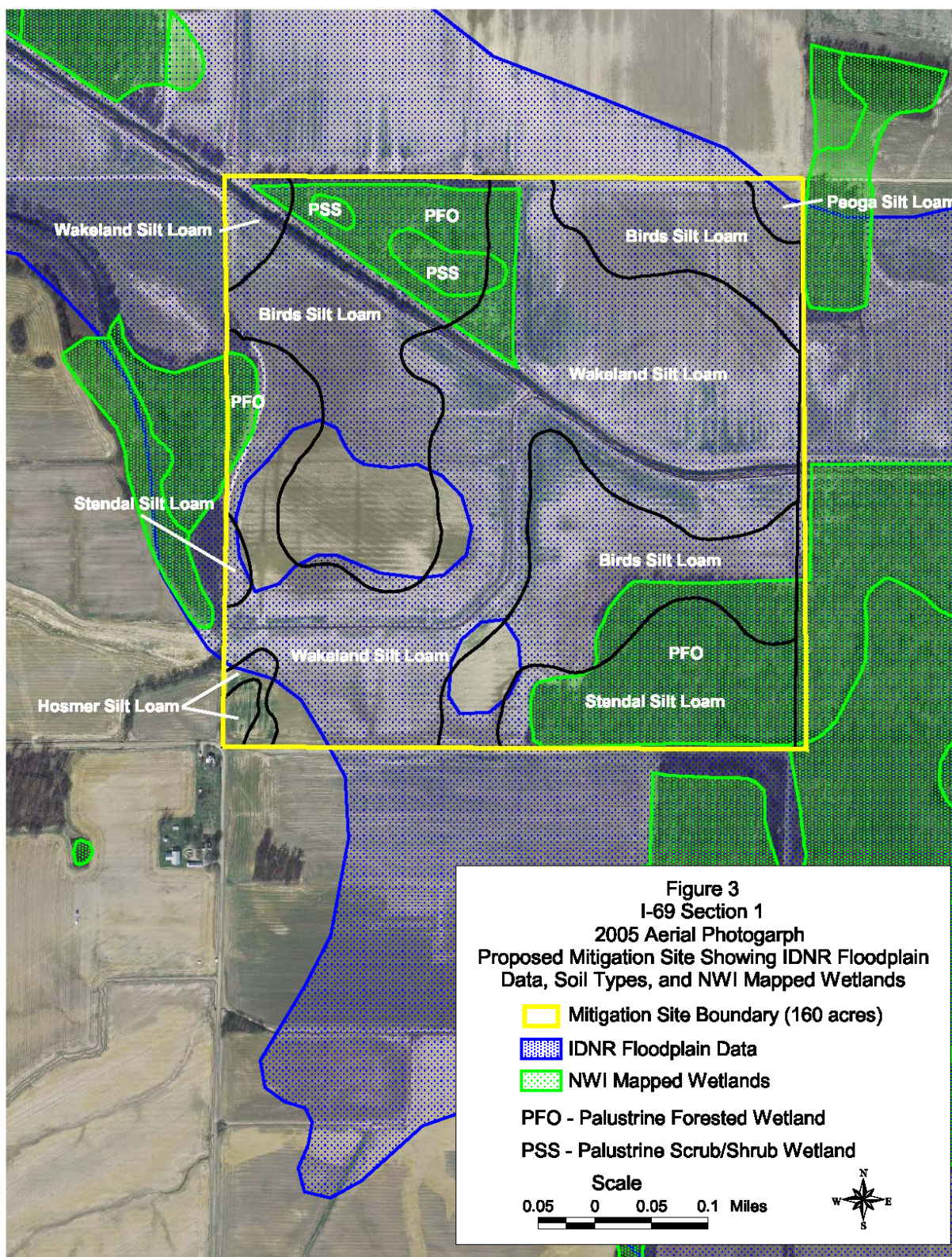




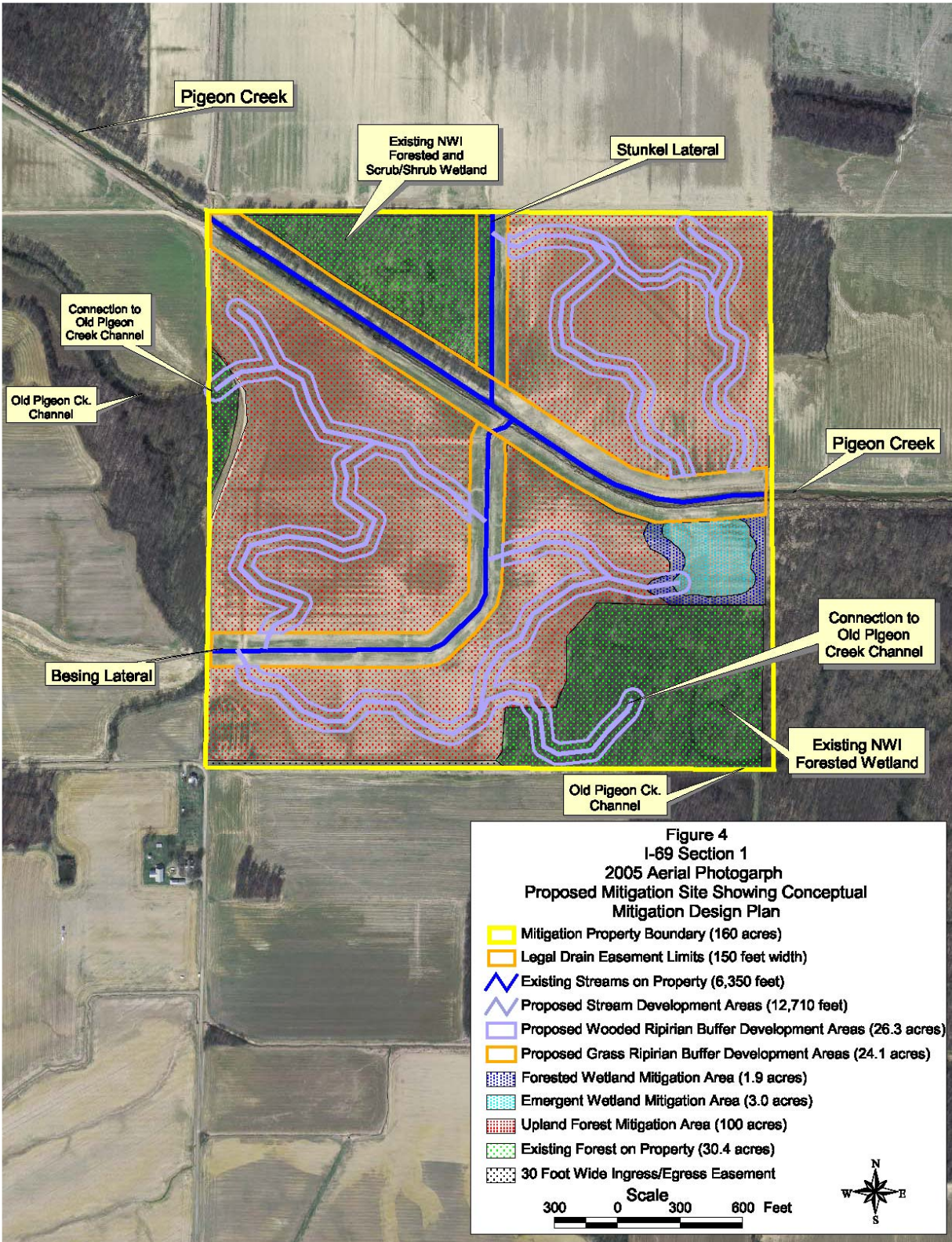




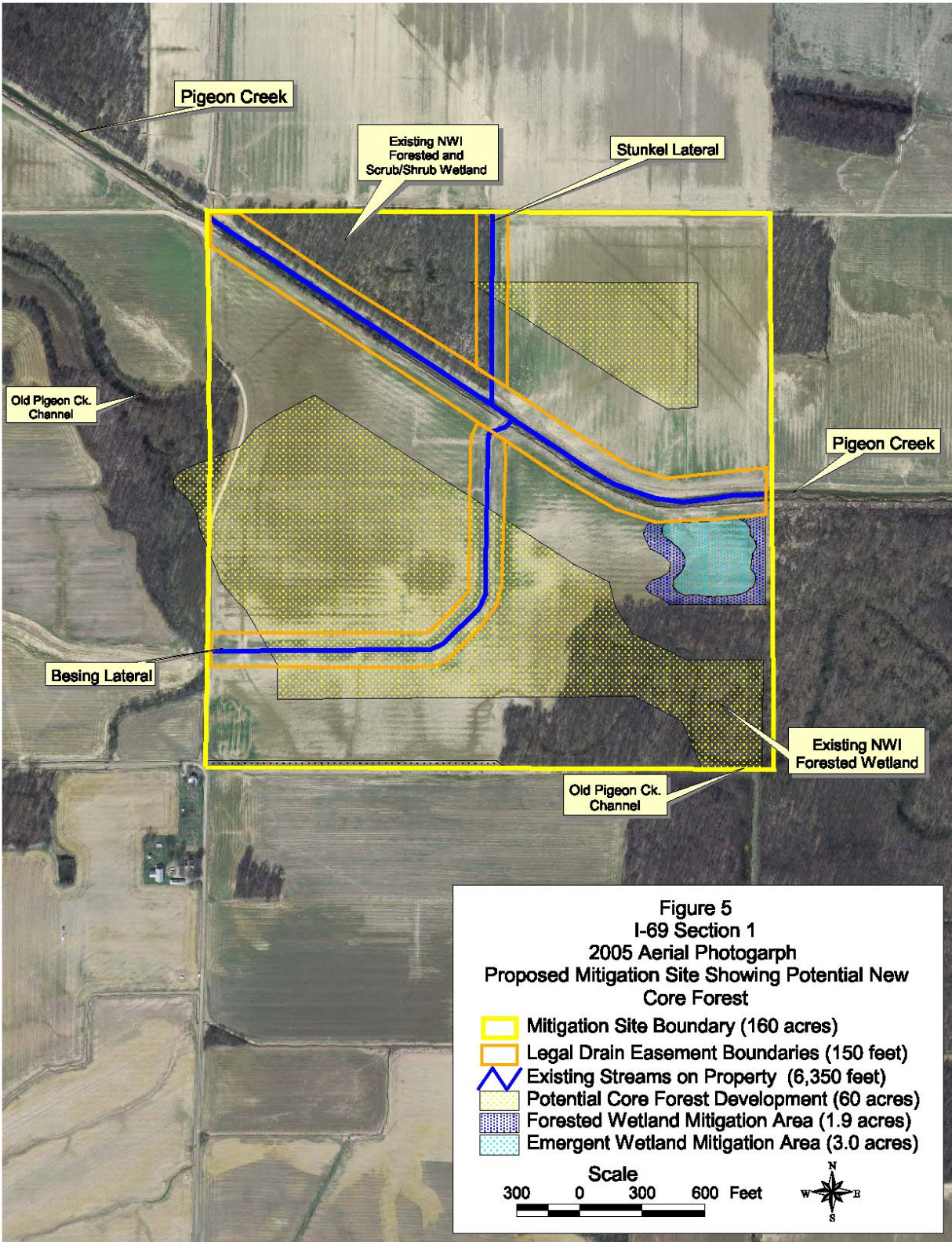












# **Appendix A**

## **Section 1 Mitigation Site Photographs**





**Photograph Showing Existing Woods on North Side of Pigeon Creek.**



**Photograph Showing Field on North Side of Pigeon Creek.**



**Photograph Showing Field on South Side of Pigeon Creek.**



**Photograph Showing Field on South Side of Pigeon Creek.**



**Photograph Showing Old Pigeon Creek Channel And Existing Woods on South Side of Pigeon Creek.**



**Photograph Showing Legal Drain on South Side of Pigeon Creek.**

# **401 WQC APPLICATION ATTACHMENT #14**

**Stream Assessment Data Sheets  
(QHEI and HHEI)**





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

35

SITE NAME/LOCATION I-69 Section 1

SITE NUMBER sec1-s02r1

RIVER BASIN Patoka (#05120209)

DRAINAGE AREA (mi<sup>2</sup>)

0.23

LENGTH OF

STREAM REACH (ft) 200'

LAT

LONG

RIVER

CODE

RIVER

MILE

DATE 8/4/05

SCORER

JE

COMMENTS

NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pt]	50
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pt]	50
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES

(A)

3

TOTAL NUMBER OF  
SUBSTRATE TYPES

(B)

2

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input checked="" type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS 3"

MAXIMUM POOL DEPTH (centimeters)

7.6 cm

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements)

(Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input checked="" type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8") [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13') [25 pts]	<input type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

COMMENTS W=48", D=24"

AVERAGE BANKFULL WIDTH (meters)

1.2 m

HHEI  
Metric  
Points

Substrate  
Max = 40

5

A+B

Pool Depth  
Max = 30

15

Bankfull  
Width  
Max = 30

15

This information must also be completed

★NOTE: River Left (L) and Right (R) as looking downstream★

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

## FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS

## SINUOSITY (Number of bends per 61 m (200 ft) of channel)

(Check ONLY one box)

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

## STREAM GRADIENT ESTIMATE

☒ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

DOWNSTREAM DESIGNATED USE(S) \_\_\_\_\_

<input type="checkbox"/> WWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> CWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> EWH Name _____	Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Elberfield NRCS Soil Map Page 12 NRCS Soil Map Stream Order 1County Warrick Township/City Johnson Township**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.10"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results) \_\_\_\_\_

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_

Additional comments/description of pollution impacts \_\_\_\_\_

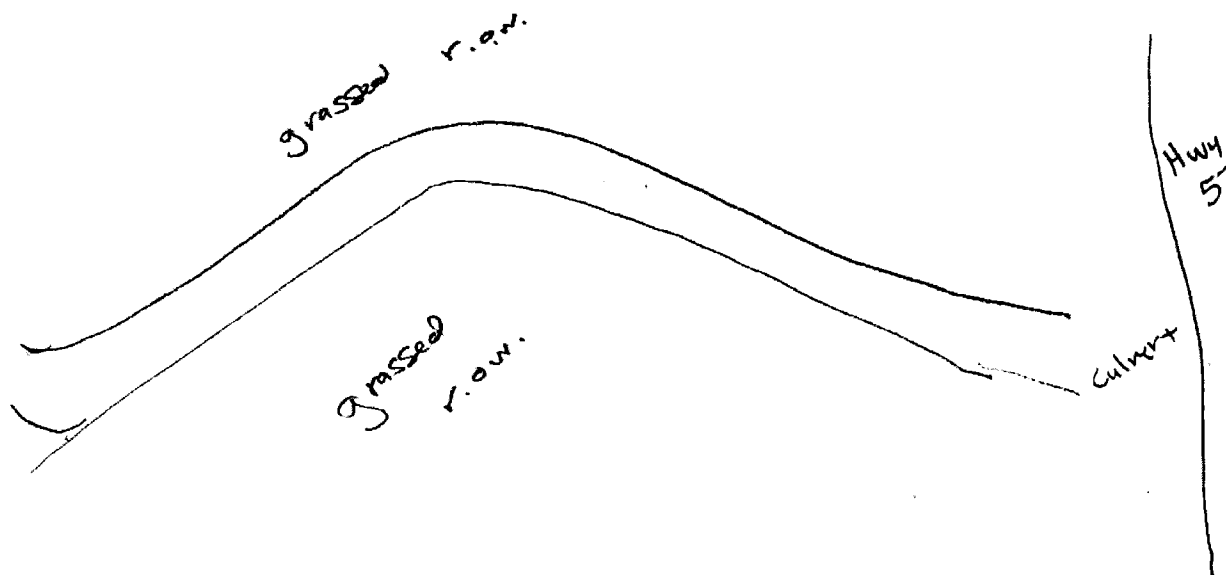
**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW







# OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
		sec1-s02r4	Section 1 of proposed I-69 corridor
Surveyor	Sample Date	County	Macro Sample Type
MP, EC	August 4, 2005	Gibson	N/A
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 33

## 1 – Substrate (20 points maximum)

Substrate Score: 5

### Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present				P=Pool, R=Riffle			
Predominant		Present		Predominant		Present	
P	R	P	R	P	R	P	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin		
<input type="checkbox"/> Limestone (1)	<input type="checkbox"/> Hardpan (0)	<input type="checkbox"/> Lacustrine (0)
<input checked="" type="checkbox"/> Tills (1)	<input type="checkbox"/> Sandstone (0)	<input type="checkbox"/> Shale (-1)
<input type="checkbox"/> Wetlands (0)	<input type="checkbox"/> Rip/Rap (0)	<input type="checkbox"/> Coal fines (-2)
Silt Cover		
<input type="checkbox"/> Silt heavy (-2)	<input type="checkbox"/> Embeddedness	
<input checked="" type="checkbox"/> Silt moderate (-1)	<input type="checkbox"/> Extensive (-2)	
<input type="checkbox"/> Silt normal (0)	<input checked="" type="checkbox"/> Moderate (-1)	
<input type="checkbox"/> Silt free (1)	<input type="checkbox"/> Low/Normal (0)	
	<input type="checkbox"/> None (1)	

NOTE: Ignore sludge originating from point sources; score based on natural substrates

☐ >4 substrates present (2)

Comments:

## 2 – Instream Cover (20 points maximum)

Instream Cover Score: 0

### Type (check ALL that apply)

<input type="checkbox"/> Undercut banks (1)	<input type="checkbox"/> Deep pools (2)	<input type="checkbox"/> Oxbows (1)
<input type="checkbox"/> Overhanging vegetation (1)	<input type="checkbox"/> Rootwads (1)	<input type="checkbox"/> Aquatic macrophytes (1)
<input type="checkbox"/> Shallows (in slow water) (1)	<input type="checkbox"/> Boulders (1)	<input type="checkbox"/> Logs and woody debris (1)
<input type="checkbox"/> Rootmats (1)	Comments: no sufficient pool depth	

### Amount (check only 1, or 2 and AVERAGE)

<input type="checkbox"/> Extensive >75% (11)
<input type="checkbox"/> Moderate 25-75% (7)
<input type="checkbox"/> Sparse 5-25% (3)
<input type="checkbox"/> Nearly absent <5% (1)

## 3 – Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 11

Sinuosity	Development	Channelization	Stability	Modifications/Other
<input type="checkbox"/> High (4)	<input type="checkbox"/> Excellent (7)	<input type="checkbox"/> None (6)	<input type="checkbox"/> High (3)	<input type="checkbox"/> Snagging
<input checked="" type="checkbox"/> Moderate (3)	<input type="checkbox"/> Good (5)	<input type="checkbox"/> Recovered (4)	<input checked="" type="checkbox"/> Moderate (2)	<input type="checkbox"/> Relocation
<input type="checkbox"/> Low (2)	<input checked="" type="checkbox"/> Fair (3)	<input checked="" type="checkbox"/> Recovering (3)	<input type="checkbox"/> Low (1)	<input type="checkbox"/> Canopy removal
<input type="checkbox"/> None (1)	<input type="checkbox"/> Poor (1)	<input type="checkbox"/> Recent or no recovery (1)		<input type="checkbox"/> Dredging
Comments:				<input type="checkbox"/> One side channel modifications
				<input type="checkbox"/> Impound
				<input type="checkbox"/> Islands
				<input type="checkbox"/> Leveed
				<input type="checkbox"/> Bank shaping

## 4 – Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 7

### Left/Right banks looking downstream (for each category, check only one per bank, OR two per bank and AVERAGE)

Riparian width		Erosion/Runoff-Floodplain Quality (past 100 ft Riparian)		Bank Erosion	
L	R (per bank)	L	R (most predominant per bank)	L	R (per bank)
<input type="checkbox"/>	<input type="checkbox"/> Wide >50 m (4)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Forest, swamp (3)	<input type="checkbox"/>	<input type="checkbox"/> None or little (3)
<input checked="" type="checkbox"/>	<input type="checkbox"/> Moderate 10-50 m (3)	<input type="checkbox"/>	<input type="checkbox"/> Shrub or old field (2)	<input type="checkbox"/>	<input checked="" type="checkbox"/> Moderate (2)
<input type="checkbox"/>	<input checked="" type="checkbox"/> Narrow 5-10m (2)	<input type="checkbox"/>	<input type="checkbox"/> Residential, park, new field (1)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Heavy/severe (1)
<input type="checkbox"/>	<input type="checkbox"/> Very narrow <5m (1)	<input type="checkbox"/>	<input type="checkbox"/> Fenced pasture (1)	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/> None (0)	Comments:			

## 5a – Pool/Glide Quality (12 points maximum)

Pool/Glide Score: 0

Max Pool Depth (check one)	Morphology (check only one, OR check two and AVERAGE)	Pool/Run/Riffle Current Velocity (check all that apply)
<input type="checkbox"/> >1 m (6)	<input type="checkbox"/> Pool width > riffle width (2)	<input type="checkbox"/> Eddies (1)
<input type="checkbox"/> 0.7-1 m (4)	<input type="checkbox"/> Pool width = riffle width (1)	<input type="checkbox"/> Fast (1)
<input type="checkbox"/> 0.4-0.7 m (2)	<input type="checkbox"/> Pool width < riffle width (0)	<input type="checkbox"/> Moderate (1)
<input type="checkbox"/> 0.2-0.4 m (1)		<input type="checkbox"/> Slow (1)
<input checked="" type="checkbox"/> <0.2 m (pool = 0)	Comments: No pools	<input type="checkbox"/> Torrential (-1)
		<input type="checkbox"/> Interstitial (-1)
		<input type="checkbox"/> Intermittent (-2)
		<input type="checkbox"/> No pool (0)

## 5b – Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/Run Depth (check one)	Riffle/Run Substrate	Riffle/Run Embeddedness
<input type="checkbox"/> Generally >10 cm, Max > 50 cm (4)	<input type="checkbox"/> Stable – eg. cobble, boulder (2)	<input type="checkbox"/> Extensive (-1)
<input type="checkbox"/> Generally >10 cm, Max < 50 cm (3)	<input type="checkbox"/> Mod. stable – eg. pea gravel (1)	<input type="checkbox"/> Moderate (0)
<input type="checkbox"/> Generally 5-10 cm (1)	<input type="checkbox"/> Unstable – eg. sand, gravel (0)	<input type="checkbox"/> Normal/Low (1)
<input checked="" type="checkbox"/> Generally <5 cm (riffle = 0)	Comments: No riffle/run complexes	<input type="checkbox"/> None (2)
		<input checked="" type="checkbox"/> No riffle (0)

## 6 – Gradient (10 points maximum)

Gradient Score: 10

Average width: 2.1	Gradient: 26.4 (ft/mile)	Drainage Area: 1.54 (square miles)
Comments: No information on field data sheet		



## OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

<b>Sample #</b>	<b>bioSample #</b>	<b>Stream Name</b>	<b>Location</b>			
		sec1-s02r4	Section 1 of the I-69 corridor			
<b>Surveyor</b>	<b>Sample Date</b>	<b>County</b>	<b>Macro Sample Type</b>	<input checked="" type="checkbox"/> <b>Habitat Complete</b>	<b>QHEI Score:</b>	<b>33</b>
MP, EC	8.4.05	Gibson	N/A			

### Impacts/Miscellaneous

#### Major Suspected Impacts (check all that apply)

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> None | <input type="checkbox"/> Suburban         |
| <input type="checkbox"/> Industrial      | <input type="checkbox"/> Channelization   |
| <input type="checkbox"/> WWTP            | <input type="checkbox"/> Riparian Removal |
| <input type="checkbox"/> Agricultural    | <input type="checkbox"/> Flow Alteration  |
| <input type="checkbox"/> Livestock       | <input type="checkbox"/> CSOs             |
| <input type="checkbox"/> Silviculture    | <input type="checkbox"/> Mining           |
| <input type="checkbox"/> Construction    | <input type="checkbox"/> Landfills        |
| <input type="checkbox"/> Urban Runoff    | <input type="checkbox"/> Natural          |

Pollution Impact Comments:

#### Miscellaneous QHEI Information

Subjective Rating (1-10):	8	% Riffle:		<i>Is reach representative of stream?</i>
Aesthetic Rating (1-10):	8	% Run:	100%	
Canopy Cover (% Open):	20%	% Glide:		
		% Pool:		Yes

General QHEI Notes:





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

25

SITE NAME/LOCATION I-69 Section 1

SITE NUMBER sec1-s04

RIVER BASIN Highland Pigeon (#05140202)

DRAINAGE AREA (m<sup>2</sup>) 0.49

LENGTH OF

STREAM REACH (ft) 200'

LAT

LONG

RIVER  
CODE

RIVER  
MILE

DATE 8/9/05

SCORER MP

COMMENTS

**NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions**

**STREAM CHANNEL** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.**

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pt]	40
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pt]	60
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

**SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES**

(A)

3

**TOTAL NUMBER OF  
SUBSTRATE TYPES**

(B)

2

**HHEI  
Metric  
Points**

**Substrate  
Max = 40**

5

A+B

2. **MAXIMUM POOL DEPTH (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)**

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

**Pool Depth  
Max = 30**

0

COMMENTS MAXIMUM POOL DEPTH (centimeters)

0 cm

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box)**

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input checked="" type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

**Bankfull  
Width  
Max = 30**

20

COMMENTS AVERAGE BANKFULL WIDTH (meters)

2.4 m

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

**This information must also be completed**

**★NOTE: River Left (L) and Right (R) as looking downstream★**

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
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**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Elberfield NRCS Soil Map Page 65 NRCS Soil Map Stream Order \_\_\_\_\_County Gibson Township/City Greer Township**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.1"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

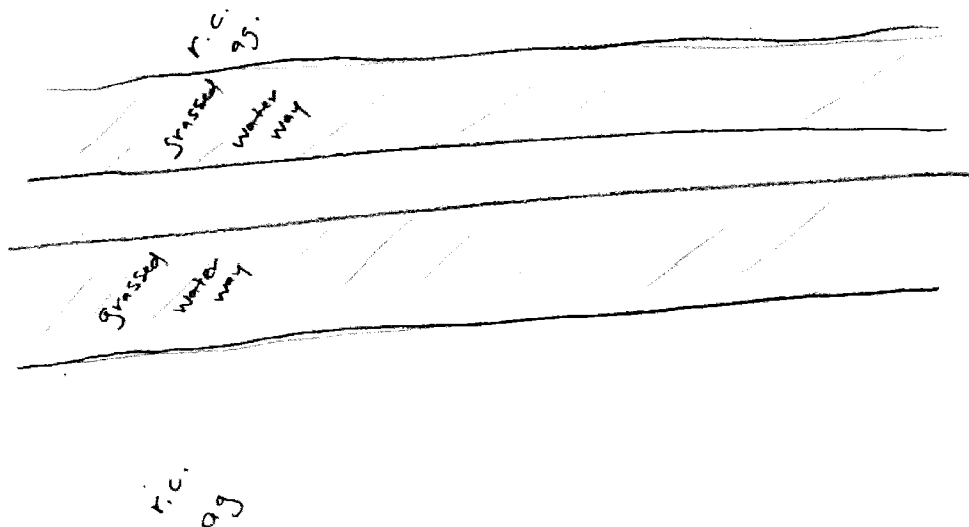
Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_Additional comments/description of pollution impacts Row crop and road adjacent to stream**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW







# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

10

SITE NAME/LOCATION I-69 Section 1

SITE NUMBER Sec1-s07

RIVER BASIN Patoka (#05120209)

DRAINAGE AREA (mi<sup>2</sup>) 0.21

LENGTH OF

STREAM REACH (ft) 200'

LAT

LONG

RIVER

CODE

RIVER

MILE

DATE 8/4/05

SCORER

JE

COMMENTS

NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PWH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pts]	50
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pts]	50
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES

(A)

3

TOTAL NUMBER OF  
SUBSTRATE TYPES

(B)

2

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS

MAXIMUM POOL DEPTH (centimeters)

0 cm

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input checked="" type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

COMMENTS W=25', D=6"

AVERAGE BANKFULL WIDTH (meters)

0.8 m

HHEI  
Metric  
Points

Substrate  
Max = 40

5

A+B

Pool Depth  
Max = 30

0

Bankfull  
Width  
Max = 30

5

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

This information must also be completed

★NOTE: River Left (L) and Right (R) as looking downstream★

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

## FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS

## SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input checked="" type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

## STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**

**QHEI PERFORMED?** ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

**DOWNSTREAM DESIGNATED USE(S)**

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USQS Quadrangle Name Elberfield NRCS Soil Map Page 78 NRCS Soil Map Stream Order \_\_\_\_\_

County Gibson Township/City Johnson

**MISCELLANEOUS**

Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.10"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%

Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_

Additional comments/description of pollution impacts \_\_\_\_\_

**BIOTIC EVALUATION**

Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

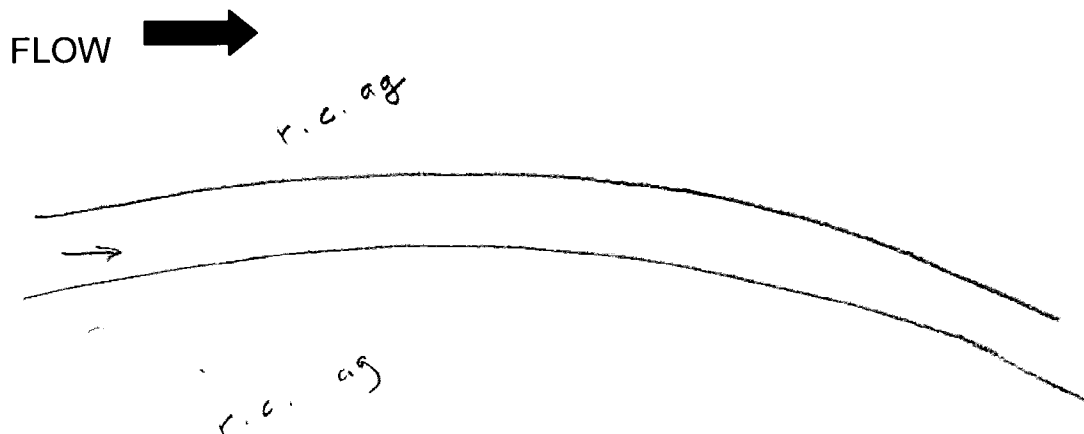
Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Frogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.







# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

10

SITE NAME/LOCATION I-69 Section 1

SITE NUMBER Sec1-s08

RIVER BASIN Patoka (#05120209)

DRAINAGE AREA (mi<sup>2</sup>) 0.05

LENGTH OF  
STREAM REACH (ft) 200'

LAT

LONG

RIVER  
CODE

RIVER  
MILE

DATE 8/4/05

SCORER JE

COMMENTS

**NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions**

**STREAM CHANNEL** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pt]	50
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pt]	50
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

COMMENTS Grassed waterway

Total of Percentages of

Bldr Slabs, Boulder, Cobble, Bedrock

**SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES**

(A)

3

**TOTAL NUMBER OF  
SUBSTRATE TYPES**

(B)

2

**HHEI  
Metric  
Points**

**Substrate  
Max = 40**

5

A+B

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters)

0 cm

**Pool Depth  
Max = 30**

0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input checked="" type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

COMMENTS 3' AVERAGE BANKFULL WIDTH (meters)

0.9 m

**Bankfull  
Width  
Max = 30**

5

**This information must also be completed**

★NOTE: River Left (L) and Right (R) as looking downstream★

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

## FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS

## SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

## STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**

**QHEI PERFORMED?** ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

DOWNSTREAM DESIGNATED USE(S) \_\_\_\_\_

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USQS Quadrangle Name Elberfield NRCS Soil Map Page 78 or 72 NRCS Soil Map Stream Order \_\_\_\_\_

County Gibson Township/City Johnson and Barton Townships

**MISCELLANEOUS**

Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.10"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%

Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results) \_\_\_\_\_

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_

Additional comments/description of pollution impacts \_\_\_\_\_

**BIOTIC EVALUATION**

Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

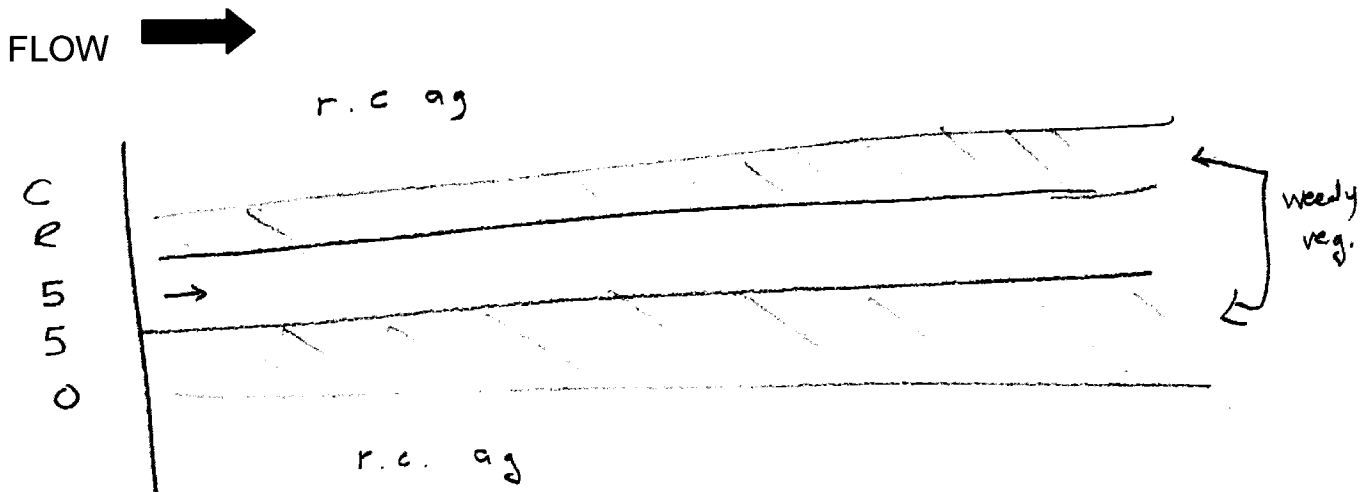
Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Frogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.







# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

10

SITE NAME/LOCATON I-69 Section 1  
SITE NUMBER Sec1-s09 RIVER BASIN Patoka #05120209 DRAINAGE AREA (m<sup>2</sup>) 0.05  
LENGTH OF STREAM REACH (ft) 200' LAT            LONG            RIVER CODE            RIVER MILE             
DATE 8/4/05 SCORER JE COMMENTS           

**NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions**

**STREAM CHANNEL** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.**

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLD R SLABS [16 pts]	<u>          </u>	<input checked="" type="checkbox"/> SILT [3 pt]	<u>70</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<u>          </u>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>          </u>
<input type="checkbox"/> BEDROCK [16 pt]	<u>          </u>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<u>          </u>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<u>          </u>	<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pt]	<u>30</u>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>          </u>	<input type="checkbox"/> MUCK [0 pts]	<u>          </u>
<input type="checkbox"/> SAND (<2mm) [6 pts]	<u>          </u>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<u>          </u>

COMMENTS Grassed ditch

Total of Percentages of  
Blr Slabs, Boulder, Cobble, Bedrock

**SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES**

(A)

3

**TOTAL NUMBER OF SUBSTRATE TYPES**

(B)

2

**HHEI Metric Points**

**Substrate Max = 40**

5

A+B

2. **MAXIMUM POOL DEPTH (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)**

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

**Pool Depth Max = 30**

0

COMMENTS            MAXIMUM POOL DEPTH (centimeters)

0 cm

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box)**

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input checked="" type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

**Bankfull Width Max = 30**

5

COMMENTS 3' AVERAGE BANKFULL WIDTH (meters)

0.9 m

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

**This information must also be completed**

★NOTE: River Left (L) and Right (R) as looking downstream★

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS           

### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS           

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

DOWNSTREAM DESIGNATED USE(S) \_\_\_\_\_

<input type="checkbox"/> WWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> CWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> EWH Name _____	Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Elberfield NRCS Soil Map Page 72 NRCS Soil Map Stream Order \_\_\_\_\_County Gibson Township/City Johnson**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.10"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results) \_\_\_\_\_

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_

Additional comments/description of pollution impacts \_\_\_\_\_

**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

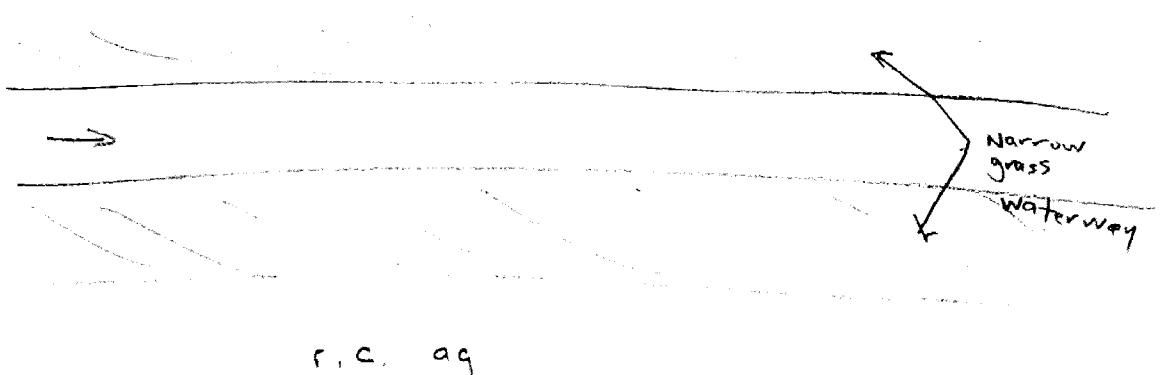
Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW



C  
R  
5  
5  
0  
E

r.c. ag





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

10

SITE NAME/LOCATION I-69 Section 1

SITE NUMBER Sec1-s10

RIVER BASIN Patoka (#05120209)

DRAINAGE AREA (mi<sup>2</sup>) 0.01

LENGTH OF

STREAM REACH (ft) 200'

LAT

LONG

RIVER

CODE

RIVER

MILE

DATE 8/4/05

SCORER JE

COMMENTS

NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pt]	50
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pt]	50
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES

(A)

3

TOTAL NUMBER OF  
SUBSTRATE TYPES

(B)

2

HHEI  
Metric  
Points

Substrate  
Max = 40

5

A+B

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth  
Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters)

0 cm

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input checked="" type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

Bankfull  
Width  
Max = 30

5

COMMENTS W=1', D=6" AVERAGE BANKFULL WIDTH (meters)

0.3 m

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

This information must also be completed

★NOTE: River Left (L) and Right (R) as looking downstream★

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

## FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS

## SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

## STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--



**ADDITIONAL STREAM INFORMATION (This information must also be completed)**

**QHEI PERFORMED?** ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

DOWNSTREAM DESIGNATED USE(S) \_\_\_\_\_

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USQS Quadrangle Name Elberfield NRCS Soil Map Page 72 NRCS Soil Map Stream Order \_\_\_\_\_

County Gibson Township/City Union

**MISCELLANEOUS**

Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.10"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%

Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results) \_\_\_\_\_

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_

Additional comments/description of pollution impacts \_\_\_\_\_

**BIOTIC EVALUATION**

Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Frogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW



r.c. ag



r.c. ag



# OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
		Sec1-s11	Section 1 of proposed I-69 corridor
Surveyor	Sample Date	County	Macro Sample Type
MP, EC	August 4, 2005	Gibson	N/A
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 23

## 1 – Substrate (20 points maximum)

Substrate Score: 7

### Check 1 Predominant Pool & 1 Predominant Riffle

#### Check all that are present

#### P=Pool, R=Riffle

P	R	P	R	P	R	P	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin		Embeddedness	
<input type="checkbox"/> Limestone (1)	<input type="checkbox"/> Hardpan (0)	<input type="checkbox"/> Lacustrine (0)	<input type="checkbox"/> Extensive (-2)
<input checked="" type="checkbox"/> Tilts (1)	<input type="checkbox"/> Sandstone (0)	<input type="checkbox"/> Shale (-1)	<input type="checkbox"/> Moderate (-1)
<input type="checkbox"/> Wetlands (0)	<input type="checkbox"/> Rip/Rap (0)	<input type="checkbox"/> Coal fines (-2)	<input type="checkbox"/> Low/Normal (0)
<input type="checkbox"/> Silt Cover		<input type="checkbox"/> None (1)	
<input type="checkbox"/> Silt heavy (-2)	<input type="checkbox"/> Silt moderate (-1)	<input type="checkbox"/> Silt normal (0)	<input type="checkbox"/> Silt free (1)

NOTE: Ignore sludge originating from point sources; score based on natural substrates

☐ >4 substrates present (2)

Comments:

## 2 – Instream Cover (20 points maximum)

Instream Cover Score: 0

### Type (check ALL that apply)

<input type="checkbox"/> Undercut banks (1)	<input type="checkbox"/> Deep pools (2)	<input type="checkbox"/> Oxbows (1)
<input type="checkbox"/> Overhanging vegetation (1)	<input checked="" type="checkbox"/> Rootwads (1)	<input type="checkbox"/> Aquatic macrophytes (1)
<input type="checkbox"/> Shallows (in slow water) (1)	<input type="checkbox"/> Boulders (1)	<input type="checkbox"/> Logs and woody debris (1)
<input type="checkbox"/> Rootmats (1)	Comments: no sufficient pool depth	

### Amount (check only 1, or 2 and AVERAGE)

<input type="checkbox"/> Extensive >75% (11)
<input type="checkbox"/> Moderate 25-75% (7)
<input type="checkbox"/> Sparse 5-25% (3)
<input type="checkbox"/> Nearly absent <5% (1)

## 3 – Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 4

Sinuosity	Development	Channelization	Stability	Modifications/Other
<input type="checkbox"/> High (4)	<input type="checkbox"/> Excellent (7)	<input type="checkbox"/> None (6)	<input type="checkbox"/> High (3)	<input type="checkbox"/> Snagging
<input type="checkbox"/> Moderate (3)	<input type="checkbox"/> Good (5)	<input type="checkbox"/> Recovered (4)	<input type="checkbox"/> Moderate (2)	<input type="checkbox"/> Relocation
<input type="checkbox"/> Low (2)	<input type="checkbox"/> Fair (3)	<input type="checkbox"/> Recovering (3)	<input checked="" type="checkbox"/> Low (1)	<input checked="" type="checkbox"/> Canopy removal
<input checked="" type="checkbox"/> None (1)	<input checked="" type="checkbox"/> Poor (1)	<input checked="" type="checkbox"/> Recent or no recovery (1)		<input checked="" type="checkbox"/> Dredging
Comments:				<input type="checkbox"/> One side channel modifications

## 4 – Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 2

### Left/Right banks looking downstream (for each category, check only one per bank, OR two per bank and AVERAGE)

Riparian width	Erosion/Runoff-Floodplain Quality (past 100 ft Riparian)	Bank Erosion
L R (per bank)	L R (most predominant per bank)	L R (per bank)
<input type="checkbox"/> Wide >50 m (4)	<input type="checkbox"/> Forest, swamp (3)	<input checked="" type="checkbox"/> None or little (3)
<input type="checkbox"/> Moderate 10-50 m (3)	<input type="checkbox"/> Shrub or old field (2)	<input type="checkbox"/> Urban or industrial (0)
<input type="checkbox"/> Narrow 5-10m (2)	<input type="checkbox"/> Residential, park, new field (1)	<input type="checkbox"/> Mining, construction (0)
<input type="checkbox"/> Very narrow <5m (1)	<input type="checkbox"/> Fenced pasture (1)	<input checked="" type="checkbox"/> Open pasture/rowcrop (0)
<input checked="" type="checkbox"/> None (0)	Comments:	

## 5a – Pool/Glide Quality (12 points maximum)

Pool/Glide Score: 0

Max Pool Depth (check one)	Morphology (check only one, OR check two and AVERAGE)	Pool/Run/Riffle Current Velocity (check all that apply)
<input type="checkbox"/> >1 m (6)	<input type="checkbox"/> Pool width > riffle width (2)	<input type="checkbox"/> Eddies (1)
<input type="checkbox"/> 0.7-1 m (4)	<input type="checkbox"/> Pool width = riffle width (1)	<input type="checkbox"/> Fast (1)
<input type="checkbox"/> 0.4-0.7 m (2)	<input type="checkbox"/> Pool width < riffle width (0)	<input type="checkbox"/> Moderate (1)
<input type="checkbox"/> 0.2-0.4 m (1)		<input type="checkbox"/> Slow (1)
<input checked="" type="checkbox"/> <0.2 m (pool = 0)	Comments: No pools	<input checked="" type="checkbox"/> No pool (0)

## 5b – Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/Run Depth (check one)	Riffle/Run Substrate	Riffle/Run Embeddedness
<input type="checkbox"/> Generally >10 cm, Max > 50 cm (4)	<input type="checkbox"/> Stable – eg. cobble, boulder (2)	<input type="checkbox"/> Extensive (-1)
<input type="checkbox"/> Generally >10 cm, Max < 50 cm (3)	<input type="checkbox"/> Mod. stable – eg. pea gravel (1)	<input type="checkbox"/> Moderate (0)
<input type="checkbox"/> Generally 5-10 cm (1)	<input type="checkbox"/> Unstable – eg. sand, gravel (0)	<input type="checkbox"/> Normal/Low (1)
<input type="checkbox"/> Generally <5 cm (riffle = 0)	Comments: No riffle/run complexes	<input checked="" type="checkbox"/> None (2)

## 6 – Gradient (10 points maximum)

Gradient Score: 10

Average width: 1.3	Gradient: 26.4 (ft/mile)	Drainage Area: 5.77 (square miles)
Comments: No information on field data sheet		



## OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

<b>Sample #</b>	<b>bioSample #</b>	<b>Stream Name</b>	<b>Location</b>			
		Sec1-s11	Section 1 of the I-69 corridor			
<b>Surveyor</b>	<b>Sample Date</b>	<b>County</b>	<b>Macro Sample Type</b>	<input checked="" type="checkbox"/> <b>Habitat Complete</b>	<b>QHEI Score:</b>	<b>23</b>
MP, EC	August 4, 2005	Gibson	N/A			

### Impacts/Miscellaneous

#### Major Suspected Impacts (check all that apply)

- |  |  |
|--|--|
| <input type="checkbox"/> None                    | <input type="checkbox"/> Suburban                  |
| <input type="checkbox"/> Industrial              | <input checked="" type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP                    | <input type="checkbox"/> Riparian Removal          |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration           |
| <input type="checkbox"/> Livestock               | <input type="checkbox"/> CSOs                      |
| <input type="checkbox"/> Silviculture            | <input type="checkbox"/> Mining                    |
| <input type="checkbox"/> Construction            | <input type="checkbox"/> Landfills                 |
| <input type="checkbox"/> Urban Runoff            | <input type="checkbox"/> Natural                   |

Pollution Impact Comments:

#### Miscellaneous QHEI Information

Subjective Rating (1-10):	6	% Riffle:		<i>Is reach representative of stream?</i>
Aesthetic Rating (1-10):	5	% Run:	100%	
Canopy Cover (% Open):	100%	% Glide:		
		% Pool:		Yes

General QHEI Notes:





# OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
		Sec1-s12	Section 1 of proposed I-69 corridor
Surveyor	Sample Date	County	Macro Sample Type
	August 4, 2005	Gibson	N/A
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 19

## 1 – Substrate (20 points maximum)

Substrate Score: 7

### Check 1 Predominant Pool & 1 Predominant Riffle

#### Check all that are present

#### P=Pool, R=Riffle

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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>							



## OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
		Sec1-s12	Section 1 of the I-69 corridor
Surveyor	Sample Date	County	Macro Sample Type
	August 4, 2005	Gibson	N/A
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 19

### Impacts/Miscellaneous

#### Major Suspected Impacts (check all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> None                    | <input type="checkbox"/> Suburban         |
| <input type="checkbox"/> Industrial              | <input type="checkbox"/> Channelization   |
| <input type="checkbox"/> WWTP                    | <input type="checkbox"/> Riparian Removal |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration  |
| <input type="checkbox"/> Livestock               | <input type="checkbox"/> CSOs             |
| <input type="checkbox"/> Silviculture            | <input type="checkbox"/> Mining           |
| <input type="checkbox"/> Construction            | <input type="checkbox"/> Landfills        |
| <input type="checkbox"/> Urban Runoff            | <input type="checkbox"/> Natural          |

Pollution Impact Comments:

#### Miscellaneous QHEI Information

Subjective Rating (1-10):	4	% Riffle:		Is reach representative of stream?
Aesthetic Rating (1-10):	4	% Run:		
Canopy Cover (% Open):	100%	% Glide:	100	
		% Pool:		Yes

General QHEI Notes:



# OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
		sec1-s13 r2	Section 1 of the I-69 Corridor
Surveyor	Sample Date	County	Macro Sample Type
Joe Exl	8.4.05	Gibson	N/A
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 27

## 1 – Substrate (20 points maximum)

Substrate Score: 10

**Check 1 Predominant Pool & 1 Predominant Riffle**  
**Check all that are present**  
**P=Pool, R=Riffle**

Predominant	Present	Predominant	Present
P R	P R	P R	P R
<input type="checkbox"/> Bldrs/Slabs (10)	<input type="checkbox"/>	<input checked="" type="checkbox"/> Hardpan (4)	<input type="checkbox"/>
<input type="checkbox"/> Boulders (9)	<input type="checkbox"/>	<input type="checkbox"/> Detritus (3)	<input checked="" type="checkbox"/>
<input type="checkbox"/> Cobble (8)	<input type="checkbox"/>	<input type="checkbox"/> Muck (2)	<input type="checkbox"/>
<input type="checkbox"/> Gravel (7)	<input type="checkbox"/>	<input type="checkbox"/> Silt (2)	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Sand (6)	<input type="checkbox"/>	<input type="checkbox"/> Sludge (1)	<input type="checkbox"/>
<input type="checkbox"/> Bedrock (5)	<input type="checkbox"/>	<input type="checkbox"/> Artificial (0)	<input type="checkbox"/>

**Substrate Quality (check only 1, or check 2 and AVERAGE)**

Substrate Origin		Embeddedness
<input type="checkbox"/> Limestone (1)	<input type="checkbox"/> Hardpan (0)	<input type="checkbox"/> Extensive (-2)
<input checked="" type="checkbox"/> Tilts (1)	<input type="checkbox"/> Sandstone (0)	<input checked="" type="checkbox"/> Moderate (-1)
<input type="checkbox"/> Wetlands (0)	<input type="checkbox"/> Rip/Rap (0)	<input type="checkbox"/> Low/Normal (0)
<b>Silt Cover</b>		<input type="checkbox"/> None (1)
<input type="checkbox"/> Silt heavy (-2)		
<input type="checkbox"/> Silt moderate (-1)		
<input checked="" type="checkbox"/> Silt normal (0)		
<input type="checkbox"/> Silt free (1)		

NOTE: Ignore sludge originating from point sources; score based on natural substrates

☐ >4 substrates present (2)

Comments:

## 2 – Instream Cover (20 points maximum)

Instream Cover Score: 1

Type (check ALL that apply)

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Undercut banks (1)           | <input type="checkbox"/> Deep pools (2) | <input type="checkbox"/> Oxbows (1)                |
| <input type="checkbox"/> Overhanging vegetation (1)   | <input type="checkbox"/> Rootwads (1)   | <input type="checkbox"/> Aquatic macrophytes (1)   |
| <input type="checkbox"/> Shallows (in slow water) (1) | <input type="checkbox"/> Boulders (1)   | <input type="checkbox"/> Logs and woody debris (1) |
| <input type="checkbox"/> Rootmats (1)                 | Comments: no instream cover             |  |

Amount (check only 1, or 2 and AVERAGE)

- |   |
|---|
| <input type="checkbox"/> Extensive >75% (11)              |
| <input type="checkbox"/> Moderate 25-75% (7)              |
| <input type="checkbox"/> Sparse 5-25% (3)                 |
| <input checked="" type="checkbox"/> Nearly absent <5% (1) |

## 3 – Channel Morphology (20)

(check only one per category, OR two and AVERAGE)

Channel Score: 7

Sinuosity	Development	Channelization	Stability	Modifications/Other
<input type="checkbox"/> High (4)	<input type="checkbox"/> Excellent (7)	<input type="checkbox"/> None (6)	<input type="checkbox"/> High (3)	<input type="checkbox"/> Snagging
<input type="checkbox"/> Moderate (3)	<input type="checkbox"/> Good (5)	<input type="checkbox"/> Recovered (4)	<input checked="" type="checkbox"/> Moderate (2)	<input type="checkbox"/> Relocation
<input type="checkbox"/> Low (2)	<input type="checkbox"/> Fair (3)	<input checked="" type="checkbox"/> Recovering (3)	<input type="checkbox"/> Low (1)	<input checked="" type="checkbox"/> Canopy removal
<input checked="" type="checkbox"/> None (1)	<input checked="" type="checkbox"/> Poor (1)	<input type="checkbox"/> Recent or no recovery (1)		<input type="checkbox"/> Dredging
Comments:				<input type="checkbox"/> One side channel modifications

## 4 – Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 5

Left/Right banks looking downstream (for each category, check only one per bank, OR two per bank and AVERAGE)

Riparian width		Erosion/Runoff-Floodplain Quality (past 100 ft Riparian)		Bank Erosion	
L R (per bank)		L R (most predominant per bank)		L R (per bank)	
<input type="checkbox"/> Wide >50 m (4)		<input checked="" type="checkbox"/> Forest, swamp (3)		<input type="checkbox"/> None or little (3)	
<input checked="" type="checkbox"/> Moderate 10-50 m (3)		<input type="checkbox"/> Shrub or old field (2)		<input checked="" type="checkbox"/> Moderate (2)	
<input type="checkbox"/> Narrow 5-10m (2)		<input type="checkbox"/> Residential, park, new field (1)		<input type="checkbox"/> Heavy/severe (1)	
<input type="checkbox"/> Very narrow <5m (1)		<input type="checkbox"/> Fenced pasture (1)			
<input type="checkbox"/> None (0)					
Comments:					

## 5a – Pool/Glide Quality (12 points maximum)

Pool/Glide Score: 2

Max Pool Depth (check one)	Morphology (check only one, OR check two and AVERAGE)	Pool/Run/Riffle Current Velocity (check all that apply)
<input type="checkbox"/> >1 m (6)	<input type="checkbox"/> Pool width > riffle width (2)	<input type="checkbox"/> Eddies (1)
<input type="checkbox"/> 0.7-1 m (4)	<input checked="" type="checkbox"/> Pool width = riffle width (1)	<input type="checkbox"/> Fast (1)
<input type="checkbox"/> 0.4-0.7 m (2)	<input type="checkbox"/> Pool width < riffle width (0)	<input type="checkbox"/> Moderate (1)
<input checked="" type="checkbox"/> 0.2-0.4 m (1)		<input type="checkbox"/> Slow (1)
<input type="checkbox"/> <0.2 m (pool = 0)	Comments: isolated pools, no flow	<input type="checkbox"/> Torrential (-1)
		<input type="checkbox"/> Interstitial (-1)
		<input type="checkbox"/> Intermittent (-2)
		<input type="checkbox"/> No pool (0)

## 5b – Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/Run Depth (check one)	Riffle/Run Substrate	Riffle/Run Embeddedness
<input type="checkbox"/> Generally >10 cm, Max > 50 cm (4)	<input type="checkbox"/> Stable – eg. cobble, boulder (2)	<input type="checkbox"/> Extensive (-1)
<input type="checkbox"/> Generally >10 cm, Max < 50 cm (3)	<input type="checkbox"/> Mod. stable – eg. pea gravel (1)	<input type="checkbox"/> Moderate (0)
<input type="checkbox"/> Generally 5-10 cm (1)	<input checked="" type="checkbox"/> Unstable – eg. sand, gravel (0)	<input type="checkbox"/> Normal/Low (1)
<input checked="" type="checkbox"/> Generally <5 cm (riffle = 0)	Comments: intermittent stream	<input type="checkbox"/> None (2)
		<input checked="" type="checkbox"/> No riffle (0)

## 6 – Gradient (10 points maximum)

Gradient Score: 2

Average width: 3 m	Gradient: 0.01 (ft/mile)	Drainage Area: 1.46 (square miles)
Comments:		





## OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

<b>Sample #</b>	<b>bioSample #</b>	<b>Stream Name</b>	<b>Location</b>			
		sec1-s13 r2	Section 1 of the I-69 corridor			
<b>Surveyor</b>	<b>Sample Date</b>	<b>County</b>	<b>Macro Sample Type</b>	<input checked="" type="checkbox"/> <b>Habitat Complete</b>	<b>QHEI Score:</b>	<b>27</b>
Joe Exl	8.4.05	Gibson	N/A			

### Impacts/Miscellaneous

#### Major Suspected Impacts (check all that apply)

- |  |  |
|--|--|
| <input type="checkbox"/> None                    | <input type="checkbox"/> Suburban                    |
| <input type="checkbox"/> Industrial              | <input checked="" type="checkbox"/> Channelization   |
| <input type="checkbox"/> WWTP                    | <input checked="" type="checkbox"/> Riparian Removal |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration             |
| <input type="checkbox"/> Livestock               | <input type="checkbox"/> CSOs                        |
| <input type="checkbox"/> Silviculture            | <input type="checkbox"/> Mining                      |
| <input type="checkbox"/> Construction            | <input type="checkbox"/> Landfills                   |
| <input type="checkbox"/> Urban Runoff            | <input type="checkbox"/> Natural                     |

#### Pollution Impact Comments:

#### Miscellaneous QHEI Information

Subjective Rating (1-10):	<input type="text" value="1"/>	% Riffle:	<input type="text" value="0"/>	<i>Is reach representative of stream?</i>
Aesthetic Rating (1-10):	<input type="text" value="3"/>	% Run:	<input type="text" value="0"/>	
Canopy Cover (% Open):	<input type="text" value="0"/>	% Glide:	<input type="text" value="100"/>	
		% Pool:	<input type="text" value="0"/>	<input type="text" value="yes"/>

#### General QHEI Notes:

SITE NAME/LOCATION **I-69 Section 1**  
 SITE NUMBER **sec1-s14** RIVER BASIN **Patoka (#05120209)** DRAINAGE AREA (m<sup>2</sup>) **0.43**  
 LENGTH OF STREAM REACH (ft) **200'** LAT \_\_\_\_\_ LONG \_\_\_\_\_ RIVER CODE \_\_\_\_\_ RIVER MILE \_\_\_\_\_  
 DATE **8/9/05** SCORER **JE** COMMENTS \_\_\_\_\_

**NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions**

**STREAM CHANNEL** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

#### MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	<b>25</b>
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input checked="" type="checkbox"/> <input type="checkbox"/> CLAY OR HARDPAN [0 pt]	<b>75</b>
<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> <input type="checkbox"/> SAND (<2mm) [6 pts]	_____	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

**SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES**

(A)

**3**

**TOTAL NUMBER OF  
SUBSTRATE TYPES**

(B)

**2**

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters)

**0**

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input checked="" type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

COMMENTS **6', 6', 4.5'** AVERAGE BANKFULL WIDTH (meters)

**1.7**

**HHEI  
Metric  
Points**

**Substrate  
Max = 40**

**5**

**A+B**

**Pool Depth  
Max = 30**

**0**

**Bankfull  
Width  
Max = 30**

**20**

**This information must also be completed**

★NOTE: River Left (L) and Right (R) as looking downstream★

#### RIPARIAN ZONE AND FLOODPLAIN QUALITY

##### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

##### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS \_\_\_\_\_

#### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS \_\_\_\_\_

#### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

#### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**

**QHEI PERFORMED?** ☐ Yes ☒ No **QHEI Score** \_\_\_\_\_ If Yes, Attach Completed QHEI Form

**DOWNSTREAM DESIGNATED USE(S)**

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

**USQS Quadrangle Name** Elberfield **NRCS Soil Map Page** 64 **NRCS Soil Map Stream Order** \_\_\_\_\_

**County** Gibson **Township/City** Barton

**MISCELLANEOUS**

**Base Flow Conditions?** ☒ Yes ☐ No **Date of Last Precipitation** 7.28.05 **Quantity** 0.10"

**Photograph Information** \_\_\_\_\_

**Elevated Turbidity?** ☐ Yes ☒ No **Canopy (% open)** 100%

**Were samples collected for water chemistry?** ☐ Yes ☒ No **Lab Number (Note lab sample no. or id and attach results)** \_\_\_\_\_

**Field Measures - Temp (°C)** \_\_\_\_\_ **Dissolved Oxygen (mg/l)** \_\_\_\_\_ **pH (S.U.)** \_\_\_\_\_ **Conductivity (µmhos/cm)** \_\_\_\_\_

**Is the sampling reach representative of the stream?** ☒ Yes ☐ No **If not, please explain** \_\_\_\_\_

**Additional comments/description of pollution impacts** \_\_\_\_\_

**BIOTIC EVALUATION**

**Performed?** ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

**Fish Observed?** ☐ Yes ☐ No **Voucher?** ☐ Yes ☐ No **Salamanders Observed?** ☐ Yes ☐ No **Voucher?** ☐ Yes ☐ No

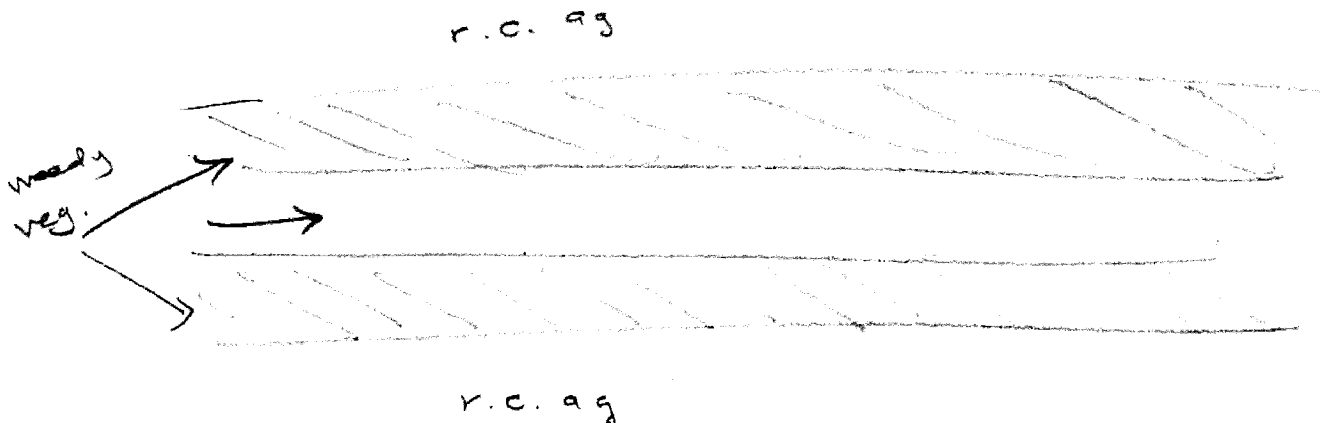
**Frogs or Tadpoles Observed?** ☐ Yes ☐ No **Voucher?** ☐ Yes ☐ No **Aquatic Macroinvertebrates Observed?** ☐ Yes ☐ No **Voucher?** ☐ Yes ☐ No

**Comments Regarding Biology** \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

**Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.**

**FLOW** 







# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

20

SITE NAME/LOCATION I-69 Section 1  
SITE NUMBER sec1-s15r2 RIVER BASIN Patoka (#05120209) DRAINAGE AREA (mi<sup>2</sup>) 0.04  
LENGTH OF STREAM REACH (ft) 200' LAT            LONG            RIVER CODE            RIVER MILE             
DATE 8/10/05 SCORER MP COMMENTS West side of 650, north of 1-17, west of 1-16b

**NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions**

**STREAM CHANNEL** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.**

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> <input type="checkbox"/> BLDR SLABS [16 pts]	<u>          </u>	<input checked="" type="checkbox"/> <input type="checkbox"/> SILT [3 pt]	<u>75</u>
<input type="checkbox"/> <input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<u>          </u>	<input type="checkbox"/> <input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>          </u>
<input type="checkbox"/> <input type="checkbox"/> BEDROCK [16 pt]	<u>          </u>	<input type="checkbox"/> <input type="checkbox"/> FINE DETRITUS [3 pts]	<u>          </u>
<input type="checkbox"/> <input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<u>          </u>	<input checked="" type="checkbox"/> <input type="checkbox"/> CLAY OR HARDPAN [0 pt]	<u>25</u>
<input type="checkbox"/> <input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>          </u>	<input type="checkbox"/> <input type="checkbox"/> MUCK [0 pts]	<u>          </u>
<input type="checkbox"/> <input type="checkbox"/> SAND (<2mm) [6 pts]	<u>          </u>	<input type="checkbox"/> <input type="checkbox"/> ARTIFICIAL [3 pts]	<u>          </u>

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

**SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES**

(A)

3

**TOTAL NUMBER OF  
SUBSTRATE TYPES**

(B)

2

**HHEI  
Metric  
Points**

**Substrate  
Max = 40**

5

A+B

2. **MAXIMUM POOL DEPTH (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)**

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

**Pool Depth  
Max = 30**

0

COMMENTS            MAXIMUM POOL DEPTH (centimeters)

0

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box)**

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input checked="" type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input type="checkbox"/> ≤1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

**Bankfull  
Width  
Max = 30**

15

COMMENTS 5', 6', 4' AVERAGE BANKFULL WIDTH (meters)

1.5

**This information must also be completed**

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

★NOTE: River Left (L) and Right (R) as looking downstream★

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS           

### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> (Check ONLY one box) Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS           

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

<input type="checkbox"/> WWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> CWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> EWH Name _____	Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Elberfield NRCS Soil Map Page 65 NRCS Soil Map Stream Order \_\_\_\_\_County Gibson Township/City Barton**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.10"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_

Additional comments/description of pollution impacts \_\_\_\_\_

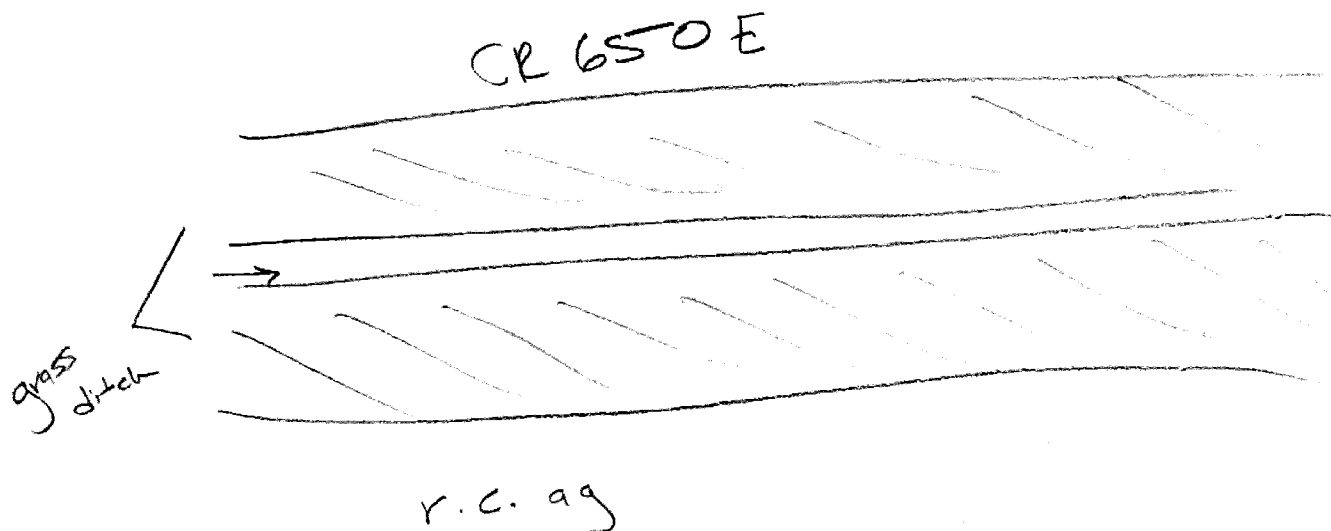
**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

55

SITE NAME/LOCATION **I-69 Section 1**

SITE NUMBER **sec1-s16r2**

RIVER BASIN **Patoka (#05120209)**

DRAINAGE AREA (mi<sup>2</sup>) **0.99**

LENGTH OF  
STREAM REACH (ft) **200'**

LAT \_\_\_\_\_ LONG \_\_\_\_\_

RIVER  
CODE \_\_\_\_\_ RIVER  
MILE \_\_\_\_\_

DATE **8/10/05**

SCORER **Mark Prancus, Erica Christensen**

COMMENTS **North of 168 & 650, upstream portion of 1-20**

**NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PWHH Streams” for Instructions**

**STREAM CHANNEL** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDL SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pts]	60
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pt]	35
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	5	<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Blr Slabs, Boulder, Cobble, Bedrock

**SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES**

(A)

12

**TOTAL NUMBER OF  
SUBSTRATE TYPES**

(B)

3

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input checked="" type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS **12"**

MAXIMUM POOL DEPTH (centimeters)

30

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements)

(Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input checked="" type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

COMMENTS **5', 7', 7'**

AVERAGE BANKFULL WIDTH (meters)

1.9

**This information must also be completed**

★NOTE: River Left (L) and Right (R) as looking downstream★

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS \_\_\_\_\_

### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS \_\_\_\_\_

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

(Check ONLY one box)

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**HHEI  
Metric  
Points**

**Substrate  
Max = 40**

15  
A+B

**Pool Depth  
Max = 30**

20

**Bankfull  
Width  
Max = 30**

20



**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☒ Yes ☐ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Francisco NRCS Soil Map Page 65 NRCS Soil Map Stream Order 3County Gibson Township/City Barton**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.1"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

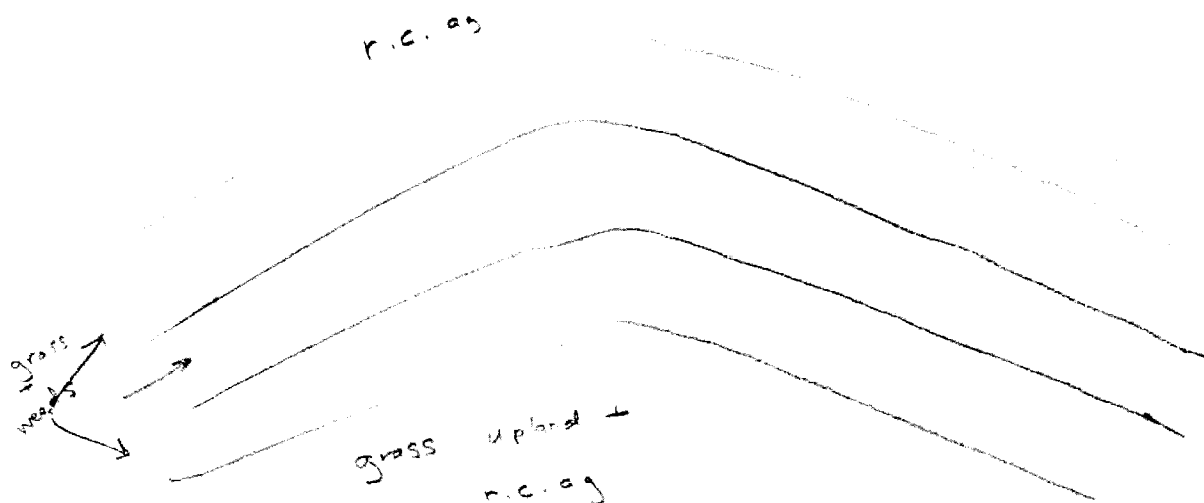
Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_Additional comments/description of pollution impacts Row crop adjacent to both sides of stream**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW



SITE NAME/LOCATION I-69 Section 1SITE NUMBER sec1-s17RIVER BASIN Patoka (#05120209)DRAINAGE AREA (mi<sup>2</sup>) 0.14

LENGTH OF

STREAM REACH (ft) 200'

LAT \_\_\_\_\_

LONG \_\_\_\_\_

RIVER

CODE \_\_\_\_\_

RIVER

MILE \_\_\_\_\_

DATE 8/9/05SCORER MPCOMMENTS Tributary off of 8**NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PWHH Streams” for Instructions****STREAM CHANNEL** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY**MODIFICATIONS**

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<u>75</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> CLAY OR HARDPAN [0 pt]	_____
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<u>25</u>	<input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> SAND (<2mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

**SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES**

(A)

12**TOTAL NUMBER OF  
SUBSTRATE TYPES**

(B)

2

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters)

0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input checked="" type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

COMMENTS 4', 5', 5' AVERAGE BANKFULL WIDTH (meters)1.4**HHEI  
Metric  
Points****Substrate  
Max = 40**14

A+B

**Pool Depth  
Max = 30**0**Bankfull  
Width  
Max = 30**15**This information must also be completed****RIPARIAN ZONE AND FLOODPLAIN QUALITY**

★NOTE: River Left (L) and Right (R) as looking downstream★

**RIPARIAN WIDTH**

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

**FLOODPLAIN QUALITY**

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS \_\_\_\_\_

**FLOW REGIME** (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS \_\_\_\_\_

**SINUOSITY** (Number of bends per 61 m (200 ft) of channel)(Check ONLY one box)

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

**STREAM GRADIENT ESTIMATE**

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**

**QHEI PERFORMED?** ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USQS Quadrangle Name Elberfield NRCS Soil Map Page 65 NRCS Soil Map Stream Order \_\_\_\_\_

County Gibson Township/City Barton

**MISCELLANEOUS**

Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.1"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) \_\_\_\_\_

Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_

Additional comments/description of pollution impacts Row crop adjacent to stream

**BIOTIC EVALUATION**

Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

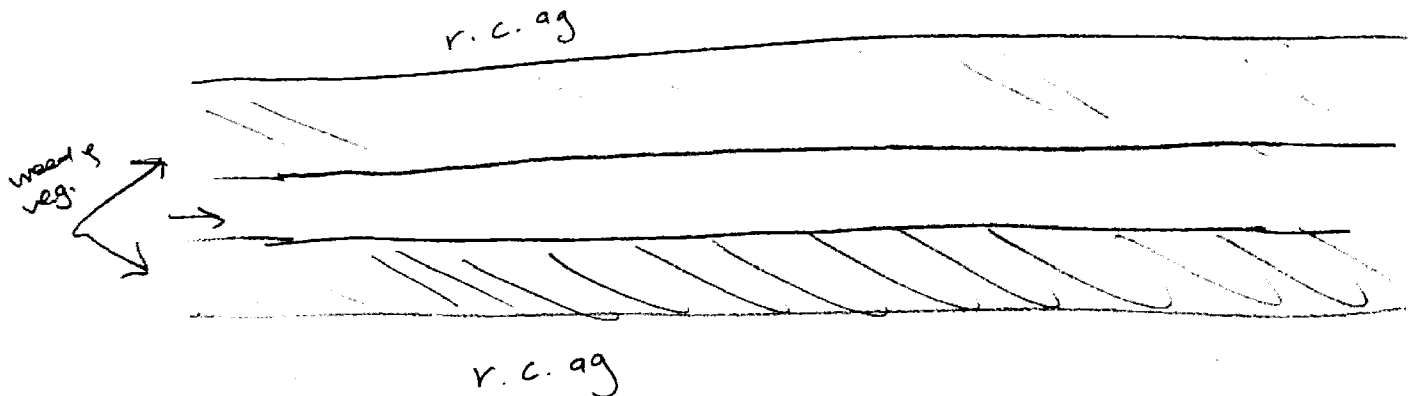
Frogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW







# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

25

SITE NAME/LOCATION		I-69 Section 1	
SITE NUMBER	sec1-s18r1	RIVER BASIN	Patoka (#05120209)
DRAINAGE AREA (m <sup>2</sup> )		0.09	
LENGTH OF STREAM REACH (ft)	200'	LAT	
		LONG	
DATE	8/9/05	SCORER	MP
COMMENTS		Upstream channel disappears	

NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pt]	50
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pt]	50
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES

(A)

3

TOTAL NUMBER OF  
SUBSTRATE TYPES

(B)

2

HHEI  
Metric  
Points

Substrate  
Max = 40

5

A+B

Pool Depth  
Max = 30

0

Bankfull  
Width  
Max = 30

20

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS MAXIMUM POOL DEPTH (centimeters)

0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input checked="" type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

COMMENTS 6', 4.5', 6.5' AVERAGE BANKFULL WIDTH (meters)

1.7

This information must also be completed

★NOTE: River Left (L) and Right (R) as looking downstream★

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

## FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS

## SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

## STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**

**QHEI PERFORMED?** ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

DOWNSTREAM DESIGNATED USE(S) \_\_\_\_\_

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USQS Quadrangle Name Elberfeld NRCS Soil Map Page 65 NRCS Soil Map Stream Order \_\_\_\_\_

County Gibson Township/City Barton

**MISCELLANEOUS**

Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.1"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 75%

Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results) \_\_\_\_\_

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_

Additional comments/description of pollution impacts Row crops adjacent to both sides of stream

**BIOTIC EVALUATION**

Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

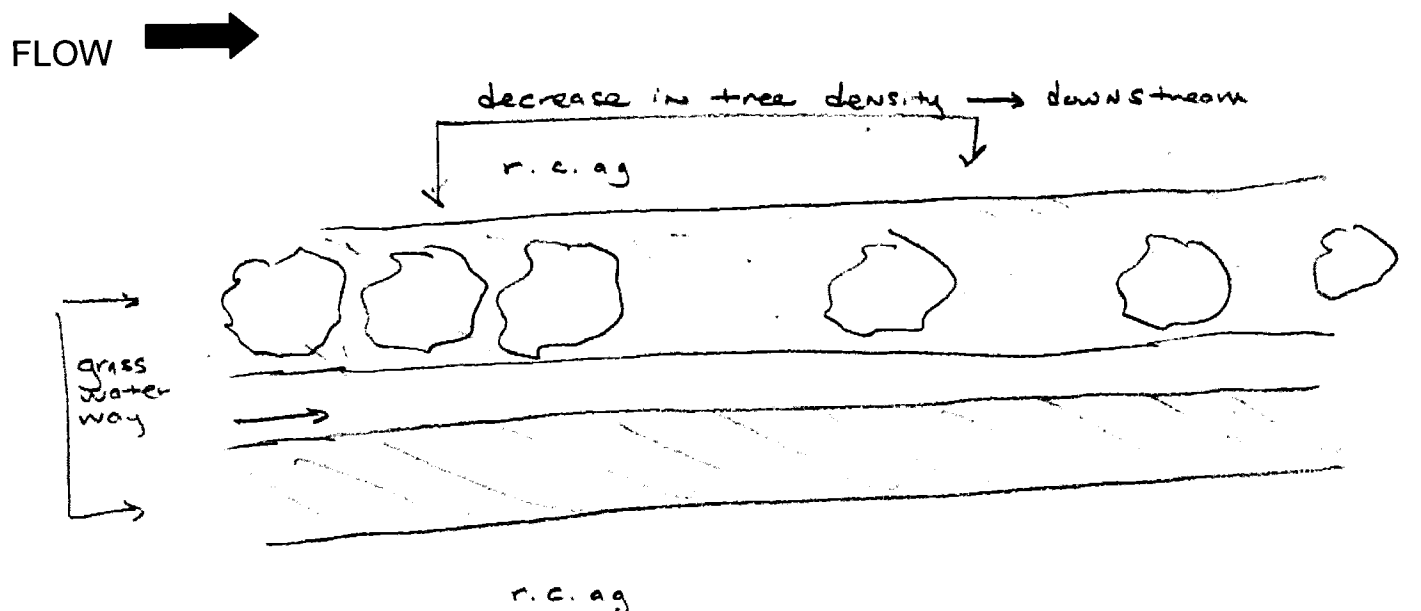
Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Frogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

9

SITE NAME/LOCATON **I-69 Section 1**

SITE NUMBER **sec1-s18r2**

RIVER BASIN **Patoka (#05120209)**

DRAINAGE AREA (m<sup>2</sup>) **0.10**

LENGTH OF

STREAM REACH (ft) **200'**

LAT

LONG

RIVER  
CODE

RIVER  
MILE

DATE **8/9/05**

SCORER **MP**

COMMENTS **Ditch north of 750**

**NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PWHH Streams” for Instructions**

**STREAM CHANNEL** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pt]	100
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input type="checkbox"/> CLAY OR HARDPAN [0 pt]	
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

**SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES**

(A)

3

**TOTAL NUMBER OF  
SUBSTRATE TYPES**

(B)

1

**HHEI  
Metric  
Points**

**Substrate  
Max = 40**

4

A+B

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

- |   |   |
|---|---|
| <input type="checkbox"/> >30 centimeters [20 pts] | <input type="checkbox"/> >5 cm – 10 cm [15 pts]                       |
| <input type="checkbox"/> 22.5 – 30 cm [30 pts]    | <input type="checkbox"/> <5 cm [5 pts]                                |
| <input type="checkbox"/> >10 – 22.5 cm [25 pts]   | <input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts] |

**Pool Depth  
Max = 30**

0

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters)

0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

- |   |  |
|---|--|
| <input type="checkbox"/> >4.0 meters (>13') [30 pts]              | <input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts] |
| <input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]    | <input checked="" type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]      |
| <input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts] |  |

**Bankfull  
Width  
Max = 30**

5

COMMENTS **3', 3', 3';** AVERAGE BANKFULL WIDTH (meters)

0.9

**This information must also be completed**

★NOTE: River Left (L) and Right (R) as looking downstream★

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

- |                                     |                                     |                   |
|-------------------------------------|-------------------------------------|-------------------|
| L                                   | R                                   | (Per Bank)        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Wide >10 m        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Moderate 5 – 10 m |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Narrow <5 m       |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | None              |

### FLOODPLAIN QUALITY

- |                          |                          |                                     |
|--------------------------|--------------------------|-------------------------------------|
| L                        | R                        | (Most Predominant per Bank)         |
| <input type="checkbox"/> | <input type="checkbox"/> | Mature Forest, Wetland              |
| <input type="checkbox"/> | <input type="checkbox"/> | Immature Forest, Shrub or Old Field |
| <input type="checkbox"/> | <input type="checkbox"/> | Residential Park, New Field         |
| <input type="checkbox"/> | <input type="checkbox"/> | Fenced Pasture                      |
- |                                     |                                     |                        |
|-------------------------------------|-------------------------------------|------------------------|
| L                                   | R                                   |                        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Conservation Tillage   |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Urban or Industrial    |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Open Pasture, Row Crop |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Mining or Construction |

COMMENTS \_\_\_\_\_

## FLOW REGIME (At Time of Evaluation)

- |   |  |
|---|--|
| <input type="checkbox"/> Stream Flowing                                     | <input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent) |
| <input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial) | <input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)          |

COMMENTS \_\_\_\_\_

## SINUOSITY (Number of bends per 61 m (200 ft) of channel)

- |  |                              |                              |                              |
|--|------------------------------|------------------------------|------------------------------|
| <input checked="" type="checkbox"/> None | <input type="checkbox"/> 1.0 | <input type="checkbox"/> 2.0 | <input type="checkbox"/> 3.0 |
| <input type="checkbox"/> 0.5             | <input type="checkbox"/> 1.5 | <input type="checkbox"/> 2.5 | <input type="checkbox"/> >3  |

## STREAM GRADIENT ESTIMATE

- |   |  |   |   |  |
|---|--|---|---|--|
| <input type="checkbox"/> Flat (0.5 ft/100 ft) | <input checked="" type="checkbox"/> Flat to Moderate | <input type="checkbox"/> Moderate (2 ft/100 ft) | <input type="checkbox"/> Moderate to Severe | <input type="checkbox"/> Severe (10 ft/100 ft) |
|---|--|---|---|--|



**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

<input type="checkbox"/> WWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> CWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> EWH Name _____	Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Elberfield NRCS Soil Map Page 65 NRCS Soil Map Stream Order \_\_\_\_\_County Gibson Township/City Barton**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.1"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

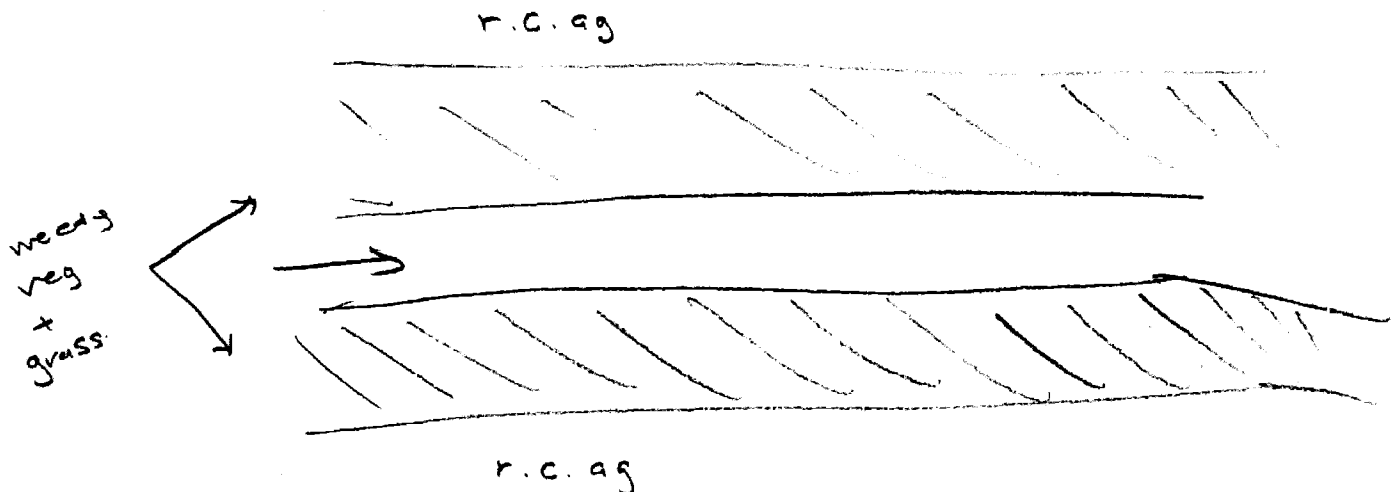
Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_Additional comments/description of pollution impacts Row crops adjacent to both sides of stream**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

10

SITE NAME/LOCATION		I-69 Section 1	
SITE NUMBER	Sec1-s19	RIVER BASIN	Patoka (#05120209)
DRAINAGE AREA (mi <sup>2</sup> )		0.06	
LENGTH OF STREAM REACH (ft)	200'	LAT	
DATE	8/10/05	LONG	
SCORER	MP	RIVER CODE	
COMMENTS	Off of 725		

NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pt]	75
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pt]	25
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES

(A)

3

TOTAL NUMBER OF  
SUBSTRATE TYPES

(B)

2

HHEI  
Metric  
Points

Substrate  
Max = 40

5

A+B

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth  
Max = 30

0

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters)

0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input checked="" type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

Bankfull  
Width  
Max = 30

5

COMMENTS 3.5', 3', 2' \_\_\_\_\_ AVERAGE BANKFULL WIDTH (meters)

0.9

This information must also be completed

★NOTE: River Left (L) and Right (R) as looking downstream★

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS \_\_\_\_\_

### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS \_\_\_\_\_

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

<input type="checkbox"/> WWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> CWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> EWH Name _____	Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Francisco NRCS Soil Map Page 65 NRCS Soil Map Stream Order \_\_\_\_\_County Gibson Township/City Barton**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.1"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

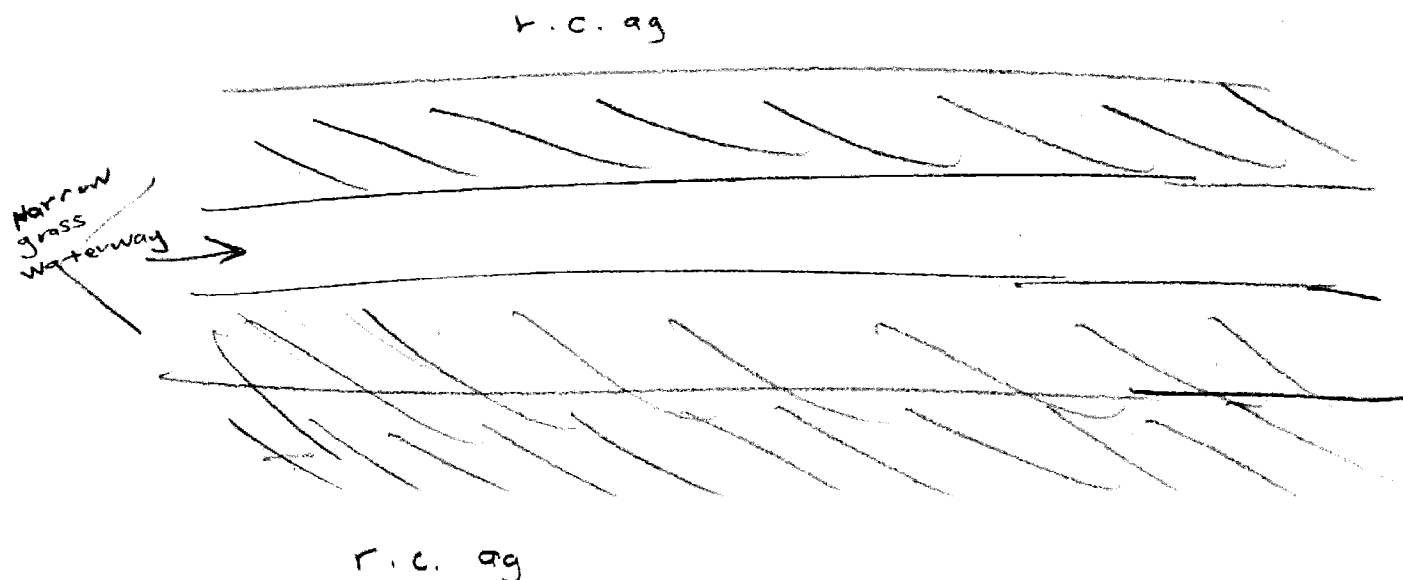
Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_Additional comments/description of pollution impacts row crop adjacent to stream on both sides**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW







# OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
		sec1-s20r2	Section 1 of proposed I-69 corridor
Surveyor	Sample Date	County	Macro Sample Type
MP, EC	8.10.05	Gibson	N/A
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 25

## 1 – Substrate (20 points maximum)

Substrate Score: 6

### Check 1 Predominant Pool & 1 Predominant Riffle

#### Check all that are present

#### P=Pool, R=Riffle

P	R	Present	P	R	Present
<input type="checkbox"/>	<input type="checkbox"/>	Bldrs/Slabs (10)	<input type="checkbox"/>	<input type="checkbox"/>	Hardpan (4)
<input type="checkbox"/>	<input type="checkbox"/>	Boulders (9)	<input type="checkbox"/>	<input type="checkbox"/>	Detritus (3)
<input type="checkbox"/>	<input type="checkbox"/>	Cobble (8)	<input type="checkbox"/>	<input type="checkbox"/>	Muck (2)
<input type="checkbox"/>	<input type="checkbox"/>	Gravel (7)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Silt (2)
<input type="checkbox"/>	<input type="checkbox"/>	Sand (6)	<input type="checkbox"/>	<input type="checkbox"/>	Sludge (1)
<input type="checkbox"/>	<input type="checkbox"/>	Bedrock (5)	<input type="checkbox"/>	<input type="checkbox"/>	Artificial (0)

### Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin		Embeddedness
<input type="checkbox"/> Limestone (1)	<input type="checkbox"/> Hardpan (0)	<input type="checkbox"/> Extensive (-2)
<input checked="" type="checkbox"/> Tilts (1)	<input type="checkbox"/> Sandstone (0)	<input type="checkbox"/> Moderate (-1)
<input type="checkbox"/> Wetlands (0)	<input type="checkbox"/> Rip/Rap (0)	<input checked="" type="checkbox"/> Low/Normal (0)
<b>Silt Cover</b>		<input type="checkbox"/> None (1)
<input type="checkbox"/> Silt heavy (-2)		
<input checked="" type="checkbox"/> Silt moderate (-1)		
<input type="checkbox"/> Silt normal (0)		
<input type="checkbox"/> Silt free (1)		

NOTE: Ignore sludge originating from point sources; score based on natural substrates

☐ >4 substrates present (2)

Comments:

## 2 – Instream Cover (20 points maximum)

Instream Cover Score: 0

### Type (check ALL that apply)

<input type="checkbox"/> Undercut banks (1)	<input type="checkbox"/> Deep pools (2)	<input type="checkbox"/> Oxbows (1)
<input type="checkbox"/> Overhanging vegetation (1)	<input type="checkbox"/> Rootwads (1)	<input type="checkbox"/> Aquatic macrophytes (1)
<input type="checkbox"/> Shallows (in slow water) (1)	<input type="checkbox"/> Boulders (1)	<input type="checkbox"/> Logs and woody debris (1)
<input type="checkbox"/> Rootmats (1)	Comments: streambed is dry, so no score given	

### Amount (check only 1, or 2 and AVERAGE)

<input type="checkbox"/> Extensive >75% (11)
<input type="checkbox"/> Moderate 25-75% (7)
<input type="checkbox"/> Sparse 5-25% (3)
<input type="checkbox"/> Nearly absent <5% (1)

## 3 – Channel Morphology (20)

(check only one per category, OR two and AVERAGE)

Channel Score: 5

Sinuosity	Development	Channelization	Stability	Modifications/Other
<input type="checkbox"/> High (4)	<input type="checkbox"/> Excellent (7)	<input type="checkbox"/> None (6)	<input type="checkbox"/> High (3)	<input checked="" type="checkbox"/> Snagging
<input type="checkbox"/> Moderate (3)	<input type="checkbox"/> Good (5)	<input type="checkbox"/> Recovered (4)	<input type="checkbox"/> Moderate (2)	<input type="checkbox"/> Relocation
<input checked="" type="checkbox"/> Low (2)	<input type="checkbox"/> Fair (3)	<input type="checkbox"/> Recovering (3)	<input checked="" type="checkbox"/> Low (1)	<input checked="" type="checkbox"/> Canopy removal
<input type="checkbox"/> None (1)	<input checked="" type="checkbox"/> Poor (1)	<input checked="" type="checkbox"/> Recent or no recovery (1)		<input type="checkbox"/> Dredging
Comments:				<input type="checkbox"/> One side channel modifications
				<input type="checkbox"/> Impound
				<input type="checkbox"/> Islands
				<input type="checkbox"/> Leveed
				<input checked="" type="checkbox"/> Bank shaping

## 4 – Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 4

### Left/Right banks looking downstream (for each category, check only one per bank, OR two per bank and AVERAGE)

Riparian width	Erosion/Runoff-Floodplain Quality (past 100 ft Riparian)	Bank Erosion
L R (per bank)	L R (most predominant per bank)	L R (per bank)
<input type="checkbox"/> Wide >50 m (4)	<input type="checkbox"/> Forest, swamp (3)	<input checked="" type="checkbox"/> None or little (3)
<input type="checkbox"/> Moderate 10-50 m (3)	<input checked="" type="checkbox"/> Shrub or old field (2)	<input type="checkbox"/> Moderate (2)
<input type="checkbox"/> Narrow 5-10m (2)	<input type="checkbox"/> Residential, park, new field (1)	<input type="checkbox"/> Heavy/severe (1)
<input type="checkbox"/> Very narrow <5m (1)	<input type="checkbox"/> Fenced pasture (1)	
<input checked="" type="checkbox"/> None (0)	Comments:	

## 5a – Pool/Glide Quality (12 points maximum)

Pool/Glide Score: 0

Max Pool Depth (check one)	Morphology (check only one, OR check two and AVERAGE)	Pool/Run/Riffle Current Velocity (check all that apply)
<input type="checkbox"/> >1 m (6)	<input type="checkbox"/> Pool width > riffle width (2)	<input type="checkbox"/> Eddies (1)
<input type="checkbox"/> 0.7-1 m (4)	<input type="checkbox"/> Pool width = riffle width (1)	<input type="checkbox"/> Fast (1)
<input type="checkbox"/> 0.4-0.7 m (2)	<input type="checkbox"/> Pool width < riffle width (0)	<input type="checkbox"/> Moderate (1)
<input type="checkbox"/> 0.2-0.4 m (1)		<input type="checkbox"/> Slow (1)
<input checked="" type="checkbox"/> <0.2 m (pool = 0)	Comments: No pools	<input checked="" type="checkbox"/> No pool (0)

## 5b – Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/Run Depth (check one)	Riffle/Run Substrate	Riffle/Run Embeddedness
<input type="checkbox"/> Generally >10 cm, Max > 50 cm (4)	<input type="checkbox"/> Stable – eg. cobble, boulder (2)	<input type="checkbox"/> Extensive (-1)
<input type="checkbox"/> Generally >10 cm, Max < 50 cm (3)	<input type="checkbox"/> Mod. stable – eg. pea gravel (1)	<input type="checkbox"/> Moderate (0)
<input type="checkbox"/> Generally 5-10 cm (1)	<input checked="" type="checkbox"/> Unstable – eg. sand, gravel (0)	<input type="checkbox"/> Normal/Low (1)
<input checked="" type="checkbox"/> Generally <5 cm (riffle = 0)	Comments: No riffle/run complexes	<input type="checkbox"/> None (2)
		<input checked="" type="checkbox"/> No riffle (0)

## 6 – Gradient (10 points maximum)

Gradient Score: 10

Average width: 2.1	Gradient: 26.4 (ft/mile)	Drainage Area: 1.33 (square miles)
Comments: No information on field data sheet		



## OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location			
		sec1-s20r2	Section 1 of the proposed I-69 corridor			
Surveyor	Sample Date	County	Macro Sample Type	<input checked="" type="checkbox"/> Habitat Complete	QHEI Score:	25
MP, EC	8.4.05	Gibson	N/A			

### Impacts/Miscellaneous

#### Major Suspected Impacts (check all that apply)

- |  |  |
|--|--|
| <input type="checkbox"/> None                    | <input type="checkbox"/> Suburban                  |
| <input type="checkbox"/> Industrial              | <input checked="" type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP                    | <input type="checkbox"/> Riparian Removal          |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration           |
| <input type="checkbox"/> Livestock               | <input type="checkbox"/> CSOs                      |
| <input type="checkbox"/> Silviculture            | <input type="checkbox"/> Mining                    |
| <input type="checkbox"/> Construction            | <input type="checkbox"/> Landfills                 |
| <input type="checkbox"/> Urban Runoff            | <input type="checkbox"/> Natural                   |

#### Pollution Impact Comments:

#### Miscellaneous QHEI Information

Subjective Rating (1-10):	3	% Riffle:		Is reach representative of stream?
Aesthetic Rating (1-10):	2	% Run:		
Canopy Cover (% Open):	60%	% Glide:		
		% Pool:		Yes

#### General QHEI Notes:

No water in the channel, so no value for riffle/pool/run/glide percentages



# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

25

SITE NAME/LOCATION		I-69 Section 1	
SITE NUMBER	Sec1-s21	RIVER BASIN	Patoka (#05120209)
DRAINAGE AREA (mi <sup>2</sup> )		0.02	
LENGTH OF STREAM REACH (ft)	200'	LAT	LONG
DATE	8/10/05	SCORER	MP
COMMENTS			

NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pt]	75
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pt]	25
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Blldr Slabs, Boulder, Cobble, Bedrock

SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES

(A)

3

TOTAL NUMBER OF  
SUBSTRATE TYPES

(B)

2

HHEI  
Metric  
Points

Substrate  
Max = 40

5

A+B

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth  
Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters)

0

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input type="checkbox"/> ≤1.0 m (≤ 3' 3") [5 pts]
<input checked="" type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

Bankfull  
Width  
Max = 30

20

COMMENTS 6', 5', 5' AVERAGE BANKFULL WIDTH (meters)

1.6

This information must also be completed

★NOTE: River Left (L) and Right (R) as looking downstream★

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input checked="" type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--



**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Francisco NRCS Soil Map Page 65 NRCS Soil Map Stream Order \_\_\_\_\_County Gibson Township/City Barton**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.1"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

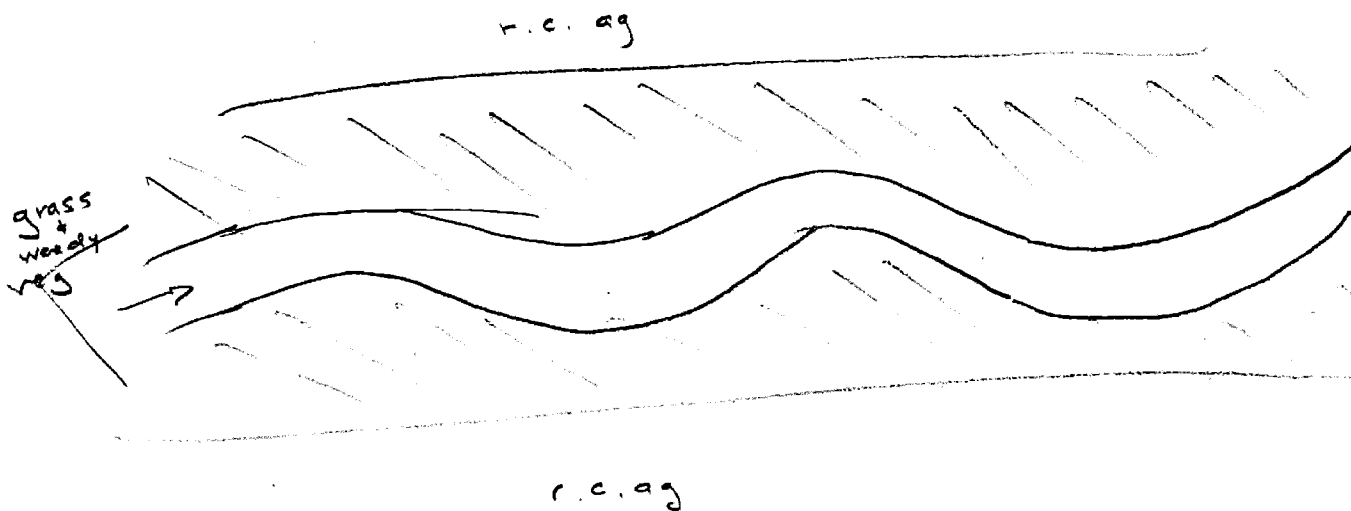
Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_Additional comments/description of pollution impacts Row crops adjacent to stream on both sides**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW



SITE NAME/LOCATION **I-69 Section 1**SITE NUMBER **Sec1-s22**RIVER BASIN **Patoka (#05120209)**DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF

STREAM REACH (ft) **200'**

LAT \_\_\_\_\_

LONG \_\_\_\_\_

RIVER  
CODE \_\_\_\_\_RIVER  
MILE \_\_\_\_\_DATE **8/10/05**SCORER **MP**

COMMENTS

**Ditch that meets East of 1-29 and 1-27****NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions****STREAM CHANNEL** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY**MODIFICATIONS**

- 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.**

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<b>75</b>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pt]	<b>25</b>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> SAND (<2mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of  
Blr Slabs, Boulder, Cobble, Bedrock**SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES****(A)****3****TOTAL NUMBER OF  
SUBSTRATE TYPES****(B)****2****HHEI  
Metric  
Points****Substrate  
Max = 40****5****A+B****Pool Depth  
Max = 30****0****Bankfull  
Width  
Max = 30****5**

- 2. MAXIMUM POOL DEPTH (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)**

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters)

**0**

- 3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box)**

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input checked="" type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

COMMENTS **2', 5', 1.5'** AVERAGE BANKFULL WIDTH (meters)**0.9****This information must also be completed****★NOTE: River Left (L) and Right (R) as looking downstream★****RIPARIAN ZONE AND FLOODPLAIN QUALITY****RIPARIAN WIDTH**

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

**FLOODPLAIN QUALITY**

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS \_\_\_\_\_

**FLOW REGIME (At Time of Evaluation)**

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS \_\_\_\_\_

**SINUOSITY (Number of bends per 61 m (200 ft) of channel)**

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

(Check ONLY one box)

**STREAM GRADIENT ESTIMATE**

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

<input type="checkbox"/> WWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> CWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> EWH Name _____	Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Francisco NRCS Soil Map Page 65 NRCS Soil Map Stream Order \_\_\_\_\_County Gibson Township/City Barton**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.1"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

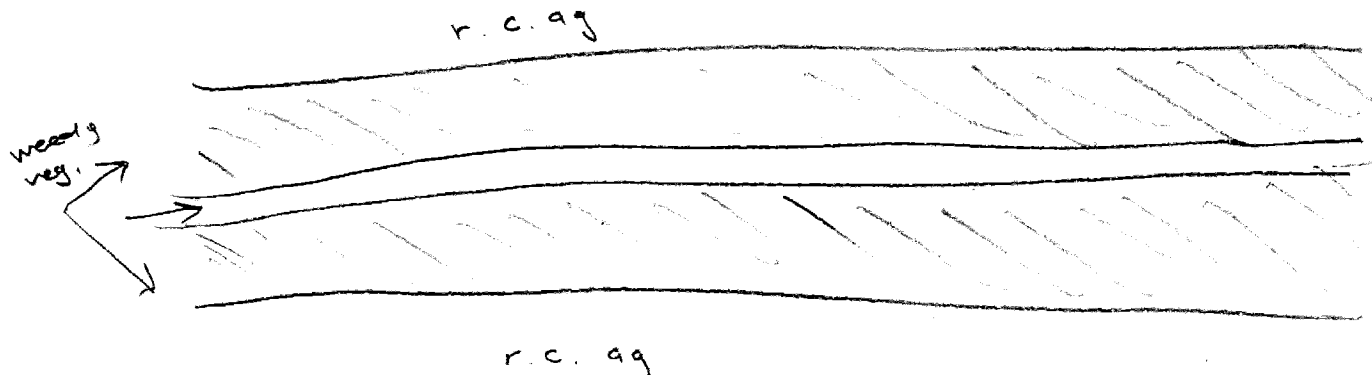
Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_Additional comments/description of pollution impacts Row crop adjacent to stream on both sides**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW







# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

61

SITE NAME/LOCATION **I-69 Section 1**  
SITE NUMBER **sec1-s25r1** RIVER BASIN \_\_\_\_\_ DRAINAGE AREA (mi<sup>2</sup>) **0.31**  
LENGTH OF STREAM REACH (ft) **200'** LAT \_\_\_\_\_ LONG \_\_\_\_\_ RIVER CODE \_\_\_\_\_ RIVER MILE \_\_\_\_\_  
DATE **8/11/05** SCORER **MP** COMMENTS **Downstream**

**NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions**

**STREAM CHANNEL** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.**

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	_____	<input type="checkbox"/> SILT [3 pt]	_____
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pt]	<b>25</b>
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<b>75</b>	<input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> SAND (<2mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

**SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES**

(A)

**9**

**TOTAL NUMBER OF  
SUBSTRATE TYPES**

(B)

**2**

**HHEI  
Metric  
Points**

**Substrate  
Max = 40**

**11**

**A+B**

2. **MAXIMUM POOL DEPTH (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)**

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input checked="" type="checkbox"/> >10 – 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

**Pool Depth  
Max = 30**

**25**

COMMENTS **6"** MAXIMUM POOL DEPTH (centimeters)

**15.2 cm**

**Bankfull  
Width  
Max = 30**

**25**

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box)**

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input checked="" type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

COMMENTS **14', 10', 13'** AVERAGE BANKFULL WIDTH (meters)

**3.7 m**

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

**This information must also be completed**

★NOTE: River Left (L) and Right (R) as looking downstream★

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Moderate 5 – 10 m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input type="checkbox"/>	<input type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS \_\_\_\_\_

### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input checked="" type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS \_\_\_\_\_

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input checked="" type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

<input type="checkbox"/> WWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> CWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> EWH Name _____	Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Francisco NRCS Soil Map Page 54 NRCS Soil Map Stream Order 1County Gibson Township/City Barton**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.1"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 10%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_

Additional comments/description of pollution impacts \_\_\_\_\_

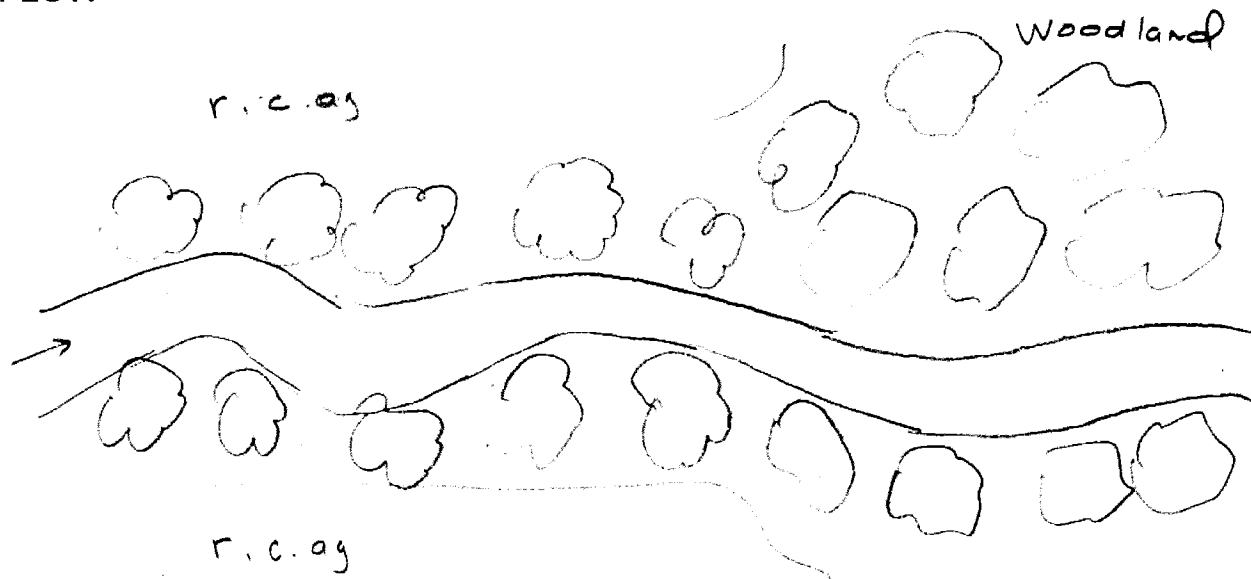
**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW





# OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
		sec1-s27	Section 1 of proposed I-69 corridor
Surveyor	Sample Date	County	Macro Sample Type
MP, EC	August 4, 2005	Gibson	N/A
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 23

## 1 – Substrate (20 points maximum)

Substrate Score: 10

### Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present				P=Pool, R=Riffle			
Predominant		Present		Predominant		Present	
P	R	P	R	P	R	P	R
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Substrate Quality (check only 1, or check 2 and AVERAGE)		
Substrate Origin		
<input type="checkbox"/> Limestone (1)	<input type="checkbox"/> Hardpan (0)	<input type="checkbox"/> Lacustrine (0)
<input type="checkbox"/> Tilts (1)	<input type="checkbox"/> Sandstone (0)	<input checked="" type="checkbox"/> Shale (-1)
<input type="checkbox"/> Wetlands (0)	<input type="checkbox"/> Rip/Rap (0)	<input type="checkbox"/> Coal fines (-2)
Silt Cover		
<input type="checkbox"/> Silt heavy (-2)	<input type="checkbox"/> Extensive (-2)	
<input type="checkbox"/> Silt moderate (-1)	<input type="checkbox"/> Moderate (-1)	
<input checked="" type="checkbox"/> Silt normal (0)	<input checked="" type="checkbox"/> Low/Normal (0)	
<input type="checkbox"/> Silt free (1)	<input type="checkbox"/> None (1)	

NOTE: Ignore sludge originating from point sources; score based on natural substrates

☐ >4 substrates present (2)

Comments:

## 2 – Instream Cover (20 points maximum)

Instream Cover Score: 0

### Type (check ALL that apply)

<input type="checkbox"/> Undercut banks (1)	<input type="checkbox"/> Deep pools (2)	<input type="checkbox"/> Oxbows (1)
<input type="checkbox"/> Overhanging vegetation (1)	<input type="checkbox"/> Rootwads (1)	<input type="checkbox"/> Aquatic macrophytes (1)
<input type="checkbox"/> Shallows (in slow water) (1)	<input type="checkbox"/> Boulders (1)	<input type="checkbox"/> Logs and woody debris (1)
<input type="checkbox"/> Rootmats (1)	Comments: no water in channel >20 cm in depth, so not scored	

### Amount (check only 1, or 2 and AVERAGE)

<input type="checkbox"/> Extensive >75% (11)
<input type="checkbox"/> Moderate 25-75% (7)
<input type="checkbox"/> Sparse 5-25% (3)
<input type="checkbox"/> Nearly absent <5% (1)

## 3 – Channel Morphology (20)

(check only one per category, OR two and AVERAGE)

Channel Score: 7

Sinuosity	Development	Channelization	Stability	Modifications/Other
<input type="checkbox"/> High (4)	<input type="checkbox"/> Excellent (7)	<input type="checkbox"/> None (6)	<input checked="" type="checkbox"/> High (3)	<input checked="" type="checkbox"/> Snagging
<input type="checkbox"/> Moderate (3)	<input type="checkbox"/> Good (5)	<input type="checkbox"/> Recovered (4)	<input type="checkbox"/> Moderate (2)	<input type="checkbox"/> Relocation
<input checked="" type="checkbox"/> Low (2)	<input type="checkbox"/> Fair (3)	<input type="checkbox"/> Recovering (3)	<input type="checkbox"/> Low (1)	<input checked="" type="checkbox"/> Canopy removal
<input type="checkbox"/> None (1)	<input checked="" type="checkbox"/> Poor (1)	<input checked="" type="checkbox"/> Recent or no recovery (1)		<input type="checkbox"/> Dredging
Comments:				<input type="checkbox"/> One side channel modifications
				<input type="checkbox"/> Impound
				<input type="checkbox"/> Islands
				<input type="checkbox"/> Leveed
				<input checked="" type="checkbox"/> Bank shaping

## 4 – Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 2

### Left/Right banks looking downstream (for each category, check only one per bank, OR two per bank and AVERAGE)

Riparian width		Erosion/Runoff-Floodplain Quality (past 100 ft Riparian)		Bank Erosion	
L	R (per bank)	L	R (most predominant per bank)	L	R (per bank)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Comments:					

## 5a – Pool/Glide Quality (12 points maximum)

Pool/Glide Score: 0

Max Pool Depth (check one)	Morphology (check only one, OR check two and AVERAGE)	Pool/Run/Riffle Current Velocity (check all that apply)
<input type="checkbox"/> >1 m (6)	<input type="checkbox"/> Pool width > riffle width (2)	<input type="checkbox"/> Eddies (1)
<input type="checkbox"/> 0.7-1 m (4)	<input type="checkbox"/> Pool width = riffle width (1)	<input type="checkbox"/> Fast (1)
<input type="checkbox"/> 0.4-0.7 m (2)	<input type="checkbox"/> Pool width < riffle width (0)	<input type="checkbox"/> Moderate (1)
<input type="checkbox"/> 0.2-0.4 m (1)		<input type="checkbox"/> Slow (1)
<input checked="" type="checkbox"/> <0.2 m (pool = 0)	Comments: No pools	<input checked="" type="checkbox"/> No pool (0)

## 5b – Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/Run Depth (check one)	Riffle/Run Substrate	Riffle/Run Embeddedness
<input type="checkbox"/> Generally >10 cm, Max > 50 cm (4)	<input type="checkbox"/> Stable – eg. cobble, boulder (2)	<input type="checkbox"/> Extensive (-1)
<input type="checkbox"/> Generally >10 cm, Max < 50 cm (3)	<input type="checkbox"/> Mod. stable – eg. pea gravel (1)	<input type="checkbox"/> Moderate (0)
<input type="checkbox"/> Generally 5-10 cm (1)	<input type="checkbox"/> Unstable – eg. sand, gravel (0)	<input type="checkbox"/> Normal/Low (1)
<input checked="" type="checkbox"/> Generally <5 cm (riffle = 0)	Comments: No riffle/run complexes	<input checked="" type="checkbox"/> None (2)
		<input checked="" type="checkbox"/> No riffle (0)

## 6 – Gradient (10 points maximum)

Gradient Score: 4

Average width: 0.86	Gradient: 158.4 (ft/mile)	Drainage Area: 1.02 (square miles)
Comments: Any site with a gradient > than the upper bound of the "very high" (40 ft/sm) is assigned a score of "4"		





## OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

<b>Sample #</b>	<b>bioSample #</b>	<b>Stream Name</b>	<b>Location</b>			
		sec1-s27	Section 1 of proposed I-69 corridor			
<b>Surveyor</b>	<b>Sample Date</b>	<b>County</b>	<b>Macro Sample Type</b>	<input checked="" type="checkbox"/> <b>Habitat Complete</b>	<b>QHEI Score:</b>	<b>23</b>
MP EC	8.4.05	Gibson	N/A			

### Impacts/Miscellaneous

#### Major Suspected Impacts (check all that apply)

- |  |   |
|--|---|
| <input type="checkbox"/> None                    | <input type="checkbox"/> Suburban         |
| <input type="checkbox"/> Industrial              | <input type="checkbox"/> Channelization   |
| <input type="checkbox"/> WWTP                    | <input type="checkbox"/> Riparian Removal |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration  |
| <input type="checkbox"/> Livestock               | <input type="checkbox"/> CSOs             |
| <input type="checkbox"/> Silviculture            | <input type="checkbox"/> Mining           |
| <input type="checkbox"/> Construction            | <input type="checkbox"/> Landfills        |
| <input checked="" type="checkbox"/> Urban Runoff | <input type="checkbox"/> Natural          |

Pollution Impact Comments:

#### Miscellaneous QHEI Information

Subjective Rating (1-10):	3	% Riffle:		<i>Is reach representative of stream?</i>
Aesthetic Rating (1-10):	4	% Run:	100%	
Canopy Cover (% Open):	100:	% Glide:		
		% Pool:		Yes

General QHEI Notes:



# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

10

SITE NAME/LOCATION <b>I-69 Section 1</b>		RIVER BASIN <b>Patoka (#05120209)</b>		DRAINAGE AREA (m <sup>2</sup> ) <b>0.02</b>	
SITE NUMBER <b>sec1-s29</b>		RIVER BASIN <b>Patoka (#05120209)</b>		DRAINAGE AREA (m <sup>2</sup> ) <b>0.02</b>	
LENGTH OF STREAM REACH (ft) <b>200'</b>		LAT <b>_____</b> LONG <b>_____</b>		RIVER CODE <b>_____</b> RIVER MILE <b>_____</b>	
DATE <b>8.11.05</b>		SCORER <b>Mark Prancus, Erica Christensen</b>		COMMENTS <b>Erosion channel in row crop field north of 550</b>	

NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input checked="" type="checkbox"/>	<input type="checkbox"/> SILT [3 pt]	<input type="checkbox"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="checkbox"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="checkbox"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="checkbox"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="checkbox"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input checked="" type="checkbox"/>	<input type="checkbox"/> CLAY OR HARDPAN [0 pt]	<input type="checkbox"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="checkbox"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="checkbox"/>
<input type="checkbox"/> SAND (<2mm) [6 pts]	<input type="checkbox"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="checkbox"/>

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES

(A)

3

TOTAL NUMBER OF  
SUBSTRATE TYPES

(B)

2

HHEI  
Metric  
Points

Substrate  
Max = 40

5  
A+B

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth  
Max = 30

0

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters)

0 cm

Bankfull  
Width  
Max = 30

5

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input checked="" type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

COMMENTS \_\_\_\_\_ AVERAGE BANKFULL WIDTH (meters)

0.8 m

This information must also be completed

★NOTE: River Left (L) and Right (R) as looking downstream★

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS \_\_\_\_\_

### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> (Check ONLY one box)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS \_\_\_\_\_

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input checked="" type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input checked="" type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	---	--	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

<input type="checkbox"/> WWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> CWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> EWH Name _____	Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Francisco NRCS Soil Map Page 54 NRCS Soil Map Stream Order \_\_\_\_\_County Gibson Township/City Barton**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.1"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

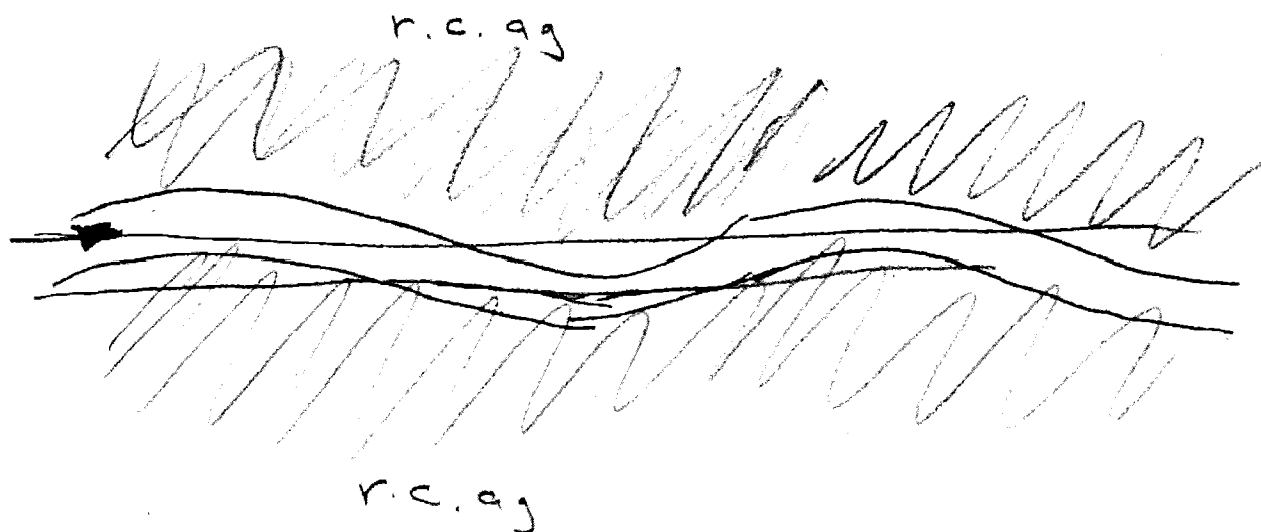
Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_Additional comments/description of pollution impacts Row crop adjacent to both sides of stream**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW







# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

57

SITE NAME/LOCATION I-69 Section 1

SITE NUMBER sec1-s30r3

RIVER BASIN Patoka (#05120209)

DRAINAGE AREA (mi<sup>2</sup>) 0.79

LENGTH OF  
STREAM REACH (ft) 200'

LAT

LONG

RIVER  
CODE

RIVER  
MILE

DATE 8.11.05

SCORER

Mark Prancus, Erica  
Christensen

COMMENTS

Section in northbound lane

NOTE: Complete All Items On This Form – Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLD R SLABS [16 pts]		<input type="checkbox"/> SILT [3 pts]	10
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pts]	50
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	40	<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Blr Slabs, Boulder, Cobble, Bedrock

SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES

(A)

9

TOTAL NUMBER OF  
SUBSTRATE TYPES

(B)

3

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

- |  |  |
|--|--|
| <input type="checkbox"/> >30 centimeters [20 pts]          | <input type="checkbox"/> >5 cm – 10 cm [15 pts]            |
| <input type="checkbox"/> 22.5 – 30 cm [30 pts]             | <input type="checkbox"/> <5 cm [5 pts]                     |
| <input checked="" type="checkbox"/> >10 – 22.5 cm [25 pts] | <input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts] |

COMMENTS

MAXIMUM POOL DEPTH (centimeters)

15.2 cm

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements)

(Check ONLY one box)

- |  |  |
|--|--|
| <input type="checkbox"/> >4.0 meters (>13') [30 pts]                         | <input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts] |
| <input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]               | <input type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]                 |
| <input checked="" type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts] |  |

COMMENTS

AVERAGE BANKFULL WIDTH (meters)

2.5 m

This information must also be completed

☆NOTE: River Left (L) and Right (R) as looking downstream☆

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

- |                                     |                                     |                   |
|-------------------------------------|-------------------------------------|-------------------|
| L                                   | R                                   | (Per Bank)        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Wide >10 m        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Moderate 5 – 10 m |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Narrow <5 m       |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | None              |

- |                          |                          |
|--------------------------|--------------------------|
| L                        | R                        |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> | <input type="checkbox"/> |

### FLOODPLAIN QUALITY

- |                                     |
|-------------------------------------|
| (Most Predominant per Bank)         |
| Mature Forest, Wetland              |
| Immature Forest, Shrub or Old Field |
| Residential Park, New Field         |
| Fenced Pasture                      |

- |                                     |                                     |                        |
|-------------------------------------|-------------------------------------|------------------------|
| L                                   | R                                   |                        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Conservation Tillage   |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Urban or Industrial    |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Open Pasture, Row Crop |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Mining or Construction |

COMMENTS

### FLOW REGIME (At Time of Evaluation)

- ☐ Stream Flowing  
☐ Subsurface Flow with Isolated Pools (Interstitial)

(Check ONLY one box)

- ☒ Moist Channel, Isolated Pools, No Flow (Intermittent)  
☐ Dry Channel, No Water (Ephemeral)

COMMENTS

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

- |                               |                              |                                     |
|-------------------------------|------------------------------|-------------------------------------|
| <input type="checkbox"/> None | <input type="checkbox"/> 1.0 | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> 0.5  | <input type="checkbox"/> 1.5 | <input type="checkbox"/>            |

(Check ONLY one box)

- |                              |                              |
|------------------------------|------------------------------|
| <input type="checkbox"/> 2.0 | <input type="checkbox"/> 3.0 |
| <input type="checkbox"/> 2.5 | <input type="checkbox"/> >3  |

### STREAM GRADIENT ESTIMATE

- ☐ Flat (0.5 ft/100 ft) ☒ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

HHEI  
Metric  
Points

Substrate  
Max = 40

12  
A+B

Pool Depth  
Max = 30

25

Bankfull  
Width  
Max = 30

20

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**

**QHEI PERFORMED?** ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USQS Quadrangle Name Francisco NRCS Soil Map Page 54 NRCS Soil Map Stream Order 2

County Gibson Township/City Barton

**MISCELLANEOUS**

Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity 0.1"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%

Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_

Additional comments/description of pollution impacts Row crop adjacent to both sides of stream

**BIOTIC EVALUATION**

Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

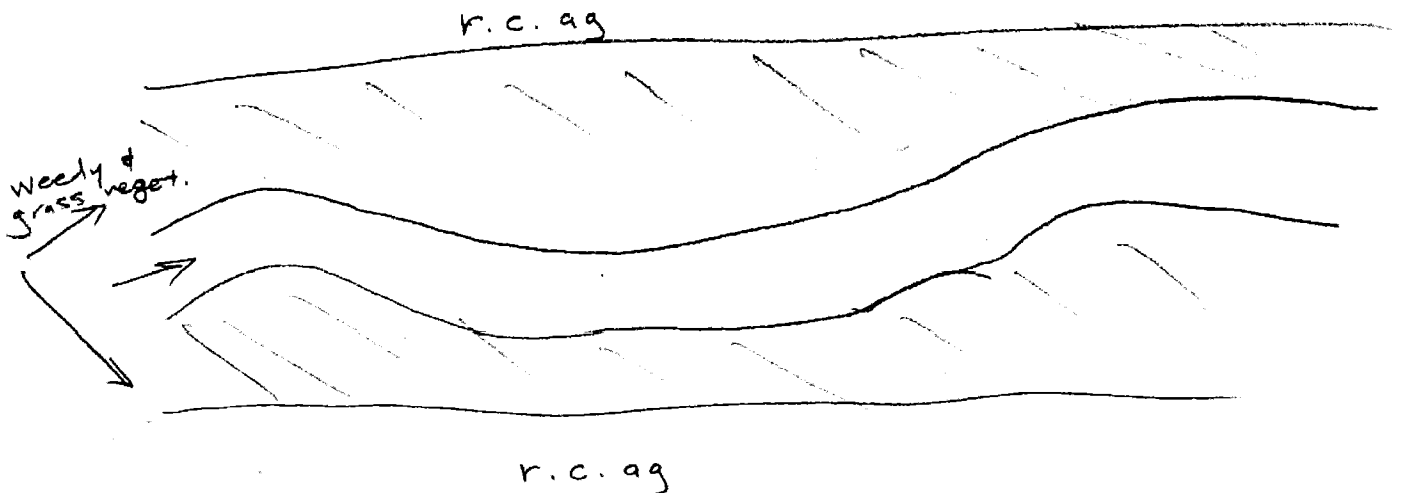
Frogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW 





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

45

SITE NAME/LOCATION **I-69 Section 1**

SITE NUMBER **sec1-s31**

RIVER BASIN **Patoka (#05120209)**

DRAINAGE AREA (mi<sup>2</sup>) **0.12**

LENGTH OF  
STREAM REACH (ft) **200'**

LAT \_\_\_\_\_ LONG \_\_\_\_\_

RIVER  
CODE \_\_\_\_\_ RIVER  
MILE \_\_\_\_\_

DATE **8.16.05**

SCORER **Mark Prancus, Erica Christensen**

COMMENTS **Standing water 1-3' deep, ditch west of 850**

**NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PWH Streams” for Instructions**

**STREAM CHANNEL** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pt]	20
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input type="checkbox"/> CLAY OR HARDPAN [0 pt]	5
<input checked="" type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	75	<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

**SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES**

(A)

12

**TOTAL NUMBER OF  
SUBSTRATE TYPES**

(B)

3

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input checked="" type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters)

7.5 cm

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input checked="" type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

COMMENTS \_\_\_\_\_ AVERAGE BANKFULL WIDTH (meters)

1.5 m

**This information must also be completed**

★NOTE: River Left (L) and Right (R) as looking downstream★

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

L	R
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>

### FLOODPLAIN QUALITY

(Most Predominant per Bank)
Mature Forest, Wetland
Immature Forest, Shrub or Old Field
Residential Park, New Field
Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS \_\_\_\_\_

### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)

(Check ONLY one box)

<input checked="" type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS \_\_\_\_\_

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input type="checkbox"/> None	<input checked="" type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

(Check ONLY one box)

### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
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**HHEI  
Metric  
Points**

**Substrate  
Max = 40**

15  
A+B

**Pool Depth  
Max = 30**

15

**Bankfull  
Width  
Max = 30**

15



**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No OHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

DOWNSTREAM DESIGNATED USE(S) \_\_\_\_\_

<input type="checkbox"/> WWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> CWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> EWH Name _____	Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Francisco NRCS Soil Map Page 54 NRCS Soil Map Stream Order 2County Gibson Township/City Barton**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 7.28.05 Quantity \_\_\_\_\_

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☒ Yes ☐ No Canopy (% open) 100%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results) \_\_\_\_\_

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

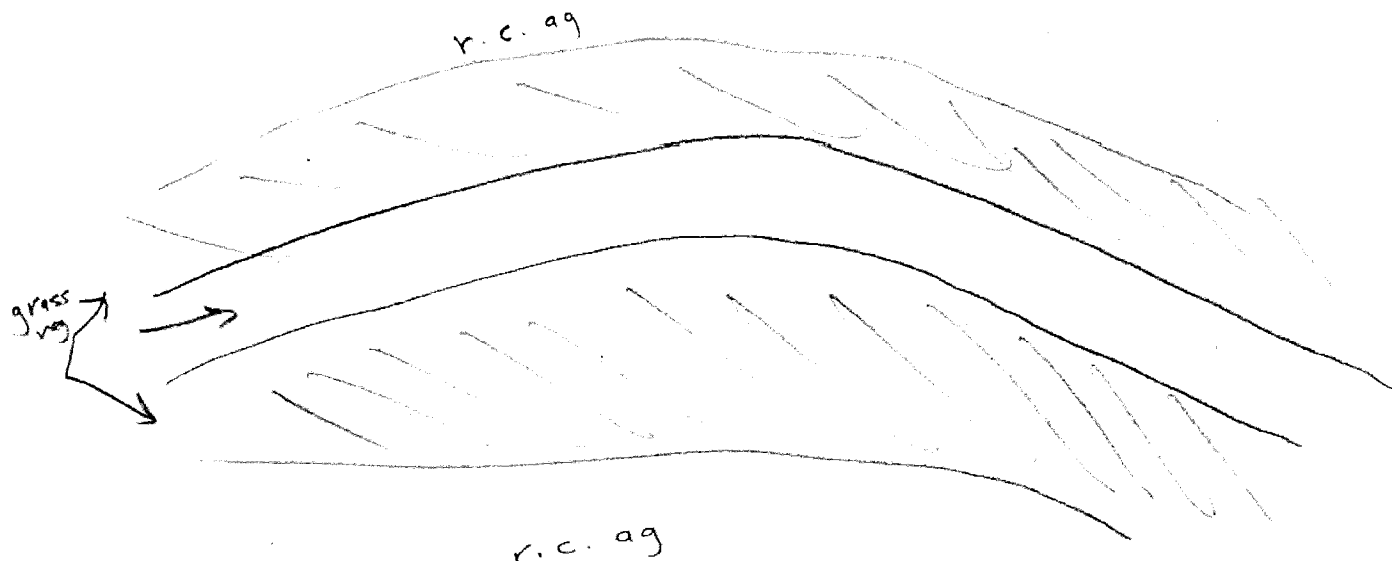
Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_Additional comments/description of pollution impacts Row crop adjacent to both sides of the stream**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

25

SITE NAME/LOCATION <b>I-69 Section 1</b>		RIVER BASIN <b>Highland Pigeon (#05140202)</b>		DRAINAGE AREA (mi <sup>2</sup> ) <b>0.03</b>	
SITE NUMBER <b>sec1-s33</b>		RIVER BASIN <b>Highland Pigeon (#05140202)</b>		DRAINAGE AREA (mi <sup>2</sup> ) <b>0.03</b>	
LENGTH OF STREAM REACH (ft) <b>200'</b>		LAT <b>_____</b> LONG <b>_____</b>		RIVER CODE <b>_____</b> RIVER MILE <b>_____</b>	
DATE <b>8.16.05</b>		SCORER <b>Mark Prancus, Erica Christensen</b>		COMMENTS <b>Feeder to pond</b>	

NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PWHH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLD R SLABS [16 pts]	<input checked="" type="checkbox"/>	SILT [3 pts]	50
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="checkbox"/>	LEAF PACK/WOODY DEBRIS [3 pts]	<input type="checkbox"/>
<input type="checkbox"/> BEDROCK [16 pts]	<input type="checkbox"/>	FINE DETRITUS [3 pts]	<input type="checkbox"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input checked="" type="checkbox"/>	CLAY OR HARDPAN [0 pts]	50
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="checkbox"/>	MUCK [0 pts]	<input type="checkbox"/>
<input type="checkbox"/> SAND (<2mm) [6 pts]	<input type="checkbox"/>	ARTIFICIAL [3 pts]	<input type="checkbox"/>

Total of Percentages of  
Blr Slabs, Boulder, Cobble, Bedrock

SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES

(A)

3

TOTAL NUMBER OF  
SUBSTRATE TYPES

(B)

2

HHEI  
Metric  
Points

Substrate  
Max = 40

5

A+B

Pool Depth  
Max = 30

0

Bankfull  
Width  
Max = 30

20

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters)

0 cm

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input checked="" type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

COMMENTS \_\_\_\_\_ AVERAGE BANKFULL WIDTH (meters)

1.8 m

This information must also be completed

★NOTE: River Left (L) and Right (R) as looking downstream★

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Narrow <5 m
<input type="checkbox"/>	<input type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS \_\_\_\_\_

### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> (Check ONLY one box)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS \_\_\_\_\_

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input checked="" type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

<input type="checkbox"/> WWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> CWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> EWH Name _____	Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Francisco NRCS Soil Map Page 44 NRCS Soil Map Stream Order 1County Gibson Township/City Columbia**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 8.16.05 Quantity 0.24"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 75%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

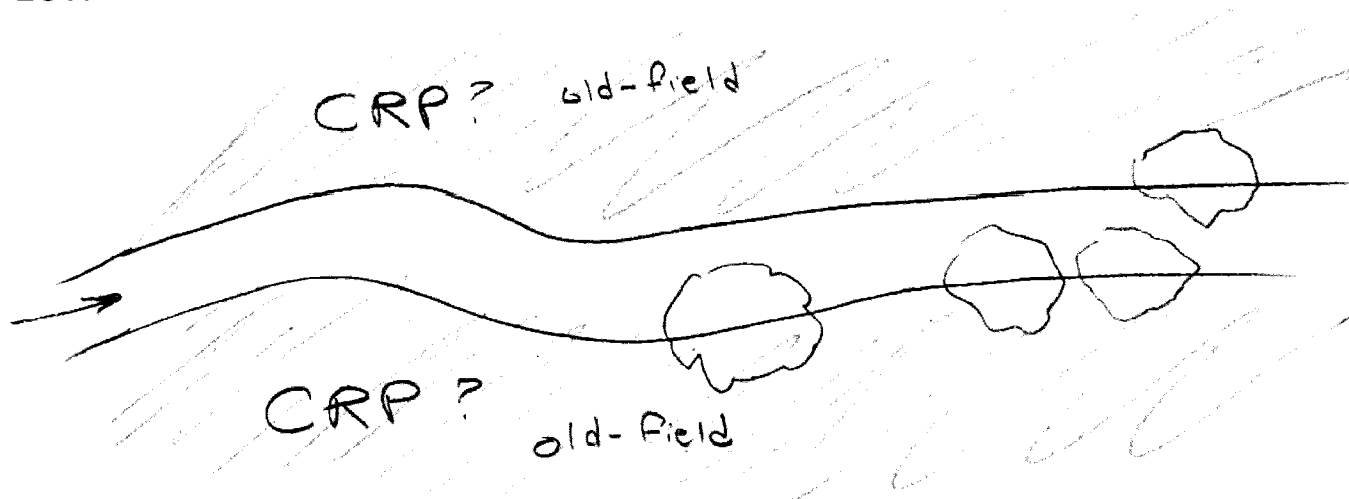
Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_Additional comments/description of pollution impacts Stream has buffer zone separating it from the road and adjacent row crops**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW 





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

9

SITE NAME/LOCATION		I-69 Section 1	
SITE NUMBER	sec1-s36r1	RIVER BASIN	Highland Pigeon (#05140202)
DRAINAGE AREA (mi <sup>2</sup> )		0.01	
LENGTH OF STREAM REACH (ft)	200'	LAT	LONG
RIVER CODE		RIVER MILE	
DATE	8.16.05	SCORER	Mark Prancus, Erica Christensen
COMMENTS		Channel south of 400	

NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> Bldr Slabs [16 pts]		<input checked="" type="checkbox"/> SILT [3 pts]	100
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input type="checkbox"/> CLAY OR HARDPAN [0 pts]	
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES

(A)

3

TOTAL NUMBER OF  
SUBSTRATE TYPES

(B)

1

HHEI  
Metric  
Points

Substrate  
Max = 40

4

A+B

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth  
Max = 30

0

COMMENTS

MAXIMUM POOL DEPTH (centimeters)

0 cm

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input checked="" type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

Bankfull  
Width  
Max = 30

5

COMMENTS

1.3, 0.5, 0.6

AVERAGE BANKFULL WIDTH (meters)

0.9 m

This information must also be completed

★NOTE: River Left (L) and Right (R) as looking downstream★

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> (Check <u>ONLY one</u> box)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input checked="" type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input type="checkbox"/> Flat to Moderate	<input checked="" type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	---	--	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

<input type="checkbox"/> WWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> CWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> EWH Name _____	Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Francisco NRCS Soil Map Page 44 NRCS Soil Map Stream Order \_\_\_\_\_County Gibson Township/City Columbia**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 8.16.05 Quantity 0.24"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

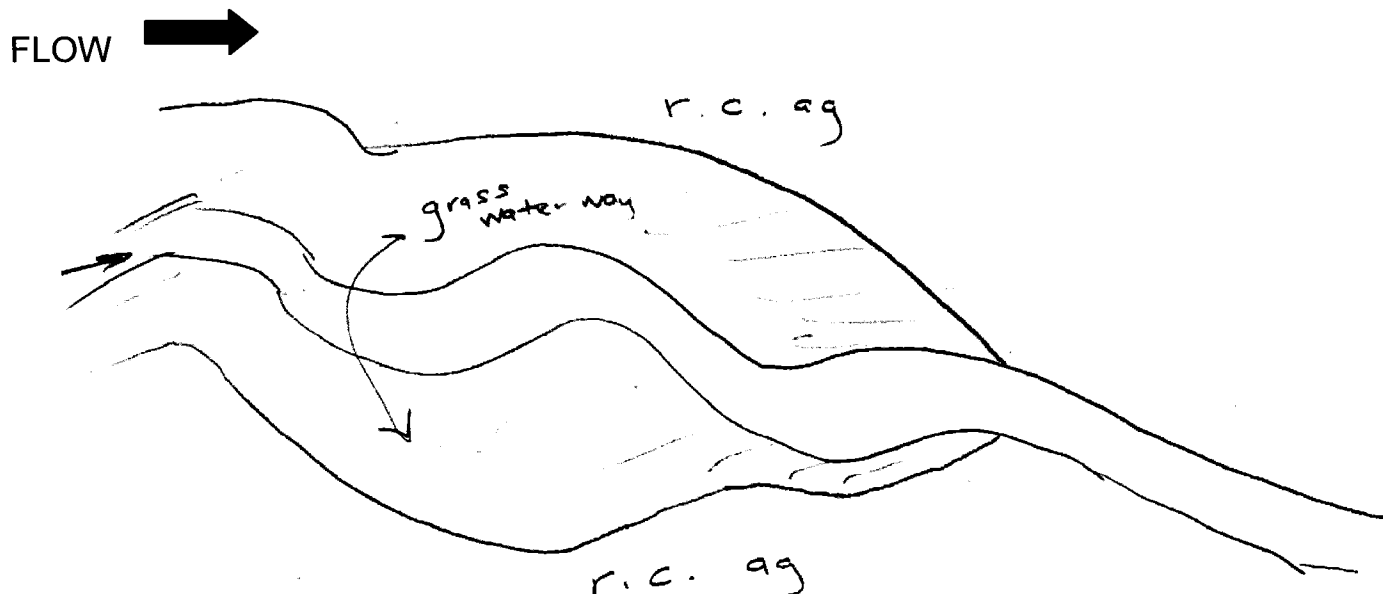
Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_Additional comments/description of pollution impacts Row crop adjacent to both sides of the stream**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

10

SITE NAME/LOCATION **I-69 Section 1**

SITE NUMBER **sec1-s35**

RIVER BASIN **Highland Pigeon (#05140202)**

DRAINAGE AREA (mi<sup>2</sup>) **0.01**

LENGTH OF

STREAM REACH (ft) **200'**

LAT

LONG

RIVER  
CODE

RIVER  
MILE

DATE **8.16.05**

SCORER

**Mark Prancus, Erica  
Christensen**

COMMENTS

**NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PWHH Streams” for Instructions**

**STREAM CHANNEL** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.**

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pt]	50
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pt]	50
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

**SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES**

(A)

3

**TOTAL NUMBER OF  
SUBSTRATE TYPES**

(B)

2

2. **MAXIMUM POOL DEPTH (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)**

- |   |   |
|---|---|
| <input type="checkbox"/> >30 centimeters [20 pts] | <input type="checkbox"/> >5 cm – 10 cm [15 pts]                       |
| <input type="checkbox"/> 22.5 – 30 cm [30 pts]    | <input type="checkbox"/> <5 cm [5 pts]                                |
| <input type="checkbox"/> >10 – 22.5 cm [25 pts]   | <input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts] |

COMMENTS

MAXIMUM POOL DEPTH (centimeters)

0 cm

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box)**

- |   |   |
|---|---|
| <input type="checkbox"/> >4.0 meters (>13') [30 pts]              | <input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8") [15 pts] |
| <input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13') [25 pts]   | <input checked="" type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]       |
| <input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts] |   |

COMMENTS

AVERAGE BANKFULL WIDTH (meters)

0.7 m

**This information must also be completed**

★NOTE: River Left (L) and Right (R) as looking downstream★

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

- |                                     |                                     |                   |
|-------------------------------------|-------------------------------------|-------------------|
| L                                   | R                                   | (Per Bank)        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Wide >10 m        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Moderate 5 – 10 m |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Narrow <5 m       |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | None              |

COMMENTS

### FLOODPLAIN QUALITY

- |                                     |                                     |                                     |
|-------------------------------------|-------------------------------------|-------------------------------------|
| L                                   | R                                   | (Most Predominant per Bank)         |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Mature Forest, Wetland              |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Immature Forest, Shrub or Old Field |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Residential Park, New Field         |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Fenced Pasture                      |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Conservation Tillage                |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Urban or Industrial                 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Open Pasture, Row Crop              |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Mining or Construction              |

### FLOW REGIME (At Time of Evaluation)

- |   |  |
|---|--|
| <input type="checkbox"/> Stream Flowing                                     | <input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent) |
| <input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial) | <input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)          |

COMMENTS

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

- |                               |                              |                              |  |
|-------------------------------|------------------------------|------------------------------|--|
| <input type="checkbox"/> None | <input type="checkbox"/> 1.0 | <input type="checkbox"/> 2.0 | <input type="checkbox"/> 3.0           |
| <input type="checkbox"/> 0.5  | <input type="checkbox"/> 1.5 | <input type="checkbox"/> 2.5 | <input checked="" type="checkbox"/> >3 |

### STREAM GRADIENT ESTIMATE

- |   |  |   |   |  |
|---|--|---|---|--|
| <input type="checkbox"/> Flat (0.5 ft/100 ft) | <input checked="" type="checkbox"/> Flat to Moderate | <input type="checkbox"/> Moderate (2 ft/100 ft) | <input type="checkbox"/> Moderate to Severe | <input type="checkbox"/> Severe (10 ft/100 ft) |
|---|--|---|---|--|



**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Francisco NRCS Soil Map Page 44 NRCS Soil Map Stream Order \_\_\_\_\_County Gibson Township/City Columbia**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 8.16.05 Quantity 0.24"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 95%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

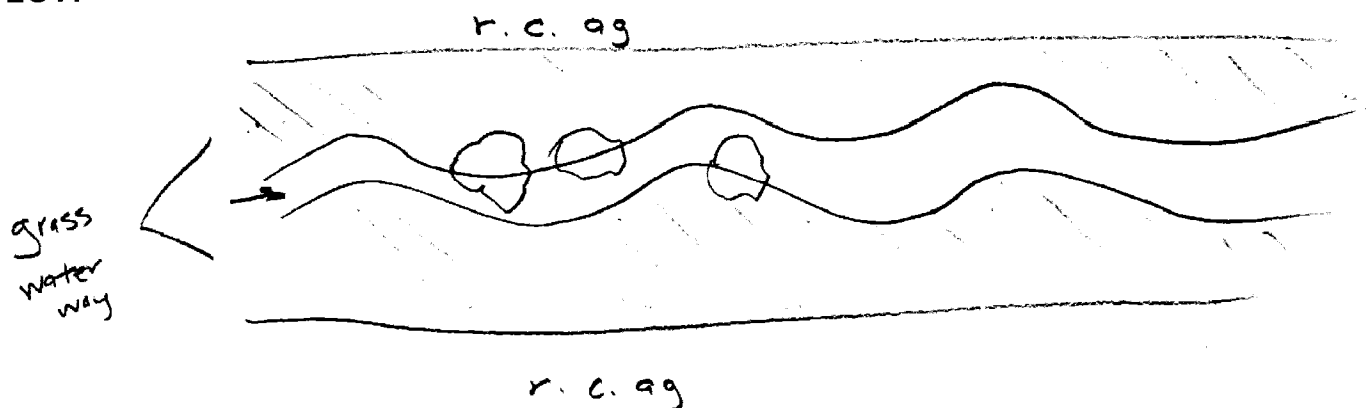
Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_Additional comments/description of pollution impacts Row crop adjacent to both sides of the stream**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

10

SITE NAME/LOCATION <b>I-69 Section 1</b>		RIVER BASIN <b>Highland Pigeon (#05140202)</b>		DRAINAGE AREA (mi <sup>2</sup> ) <b>0.01</b>	
SITE NUMBER <b>sec1-s36r2</b>		RIVER BASIN <b>Highland Pigeon (#05140202)</b>		DRAINAGE AREA (mi <sup>2</sup> ) <b>0.01</b>	
LENGTH OF STREAM REACH (ft) <b>200'</b>		LAT <b>_____</b> LONG <b>_____</b>		RIVER CODE <b>_____</b> RIVER MILE <b>_____</b>	
DATE <b>8.16.05</b>		SCORER <b>Mark Prancus, Erica Christensen</b>		COMMENTS <b>downstream portion of 17, change in riparian zone</b>	

NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> Bldr Slabs [16 pts]	<input checked="" type="checkbox"/>	<input type="checkbox"/> SILT [3 pts]	<input type="checkbox"/>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="checkbox"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<input type="checkbox"/>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="checkbox"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<input type="checkbox"/>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input checked="" type="checkbox"/>	<input type="checkbox"/> CLAY OR HARDPAN [0 pt]	<input type="checkbox"/>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="checkbox"/>	<input type="checkbox"/> MUCK [0 pts]	<input type="checkbox"/>
<input type="checkbox"/> SAND (<2mm) [6 pts]	<input type="checkbox"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<input type="checkbox"/>

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES

(A)

3

TOTAL NUMBER OF  
SUBSTRATE TYPES

(B)

2

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters)

0 cm

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input checked="" type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

COMMENTS \_\_\_\_\_ AVERAGE BANKFULL WIDTH (meters)

0.9 m

HHEI  
Metric  
Points

Substrate  
Max = 40

5

A+B

Pool Depth  
Max = 30

0

Bankfull  
Width  
Max = 30

5

This information must also be completed

☆NOTE: River Left (L) and Right (R) as looking downstream☆

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

L	R	(Per Bank)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS \_\_\_\_\_

### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS \_\_\_\_\_

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Francisco NRCS Soil Map Page 44 NRCS Soil Map Stream Order \_\_\_\_\_County Gibson Township/City Columbia**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 8.16.05 Quantity 0.24"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 0%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_

Additional comments/description of pollution impacts \_\_\_\_\_

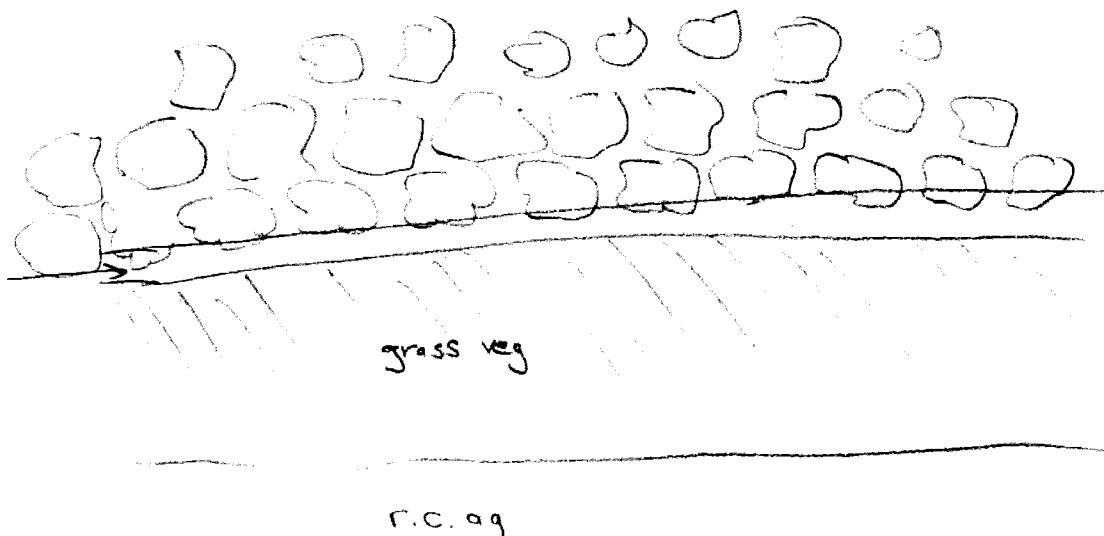
**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW







# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

10

SITE NAME/LOCATION **I-69 Section 1**

SITE NUMBER **sec1-s37**

RIVER BASIN **Highland Pigeon (#05140202)**

DRAINAGE AREA (m<sup>2</sup>) **0.04**

LENGTH OF  
STREAM REACH (ft) **200'**

LAT \_\_\_\_\_

LONG \_\_\_\_\_

RIVER  
CODE \_\_\_\_\_

RIVER  
MILE \_\_\_\_\_

DATE **8.17.05**

SCORER

**Mark Prancus, Erica Christensen**

COMMENTS

**Drainage swale east of 360/850**

**NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions**

**STREAM CHANNEL** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

- 1. SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.**

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLD R SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<b>50</b>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	_____
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pt]	<b>50</b>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> SAND (<2mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of  
Blr Slabs, Boulder, Cobble, Bedrock

**SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES**

(A)

**3**

**TOTAL NUMBER OF  
SUBSTRATE TYPES**

(B)

**2**

**HHEI  
Metric  
Points**

**Substrate  
Max = 40**

**5**

**A+B**

- 2. MAXIMUM POOL DEPTH (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)**

- |   |   |
|---|---|
| <input type="checkbox"/> >30 centimeters [20 pts] | <input type="checkbox"/> >5 cm – 10 cm [15 pts]                       |
| <input type="checkbox"/> 22.5 – 30 cm [30 pts]    | <input type="checkbox"/> <5 cm [5 pts]                                |
| <input type="checkbox"/> >10 – 22.5 cm [25 pts]   | <input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts] |

**Pool Depth  
Max = 30**

**0**

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters)

**0 cm**

- 3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box)**

- |   |  |
|---|--|
| <input type="checkbox"/> >4.0 meters (>13') [30 pts]              | <input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts] |
| <input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]    | <input checked="" type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]      |
| <input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts] |  |

**Bankfull  
Width  
Max = 30**

**5**

COMMENTS \_\_\_\_\_ AVERAGE BANKFULL WIDTH (meters)

**0.7 m**

**This information must also be completed**

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

★NOTE: River Left (L) and Right (R) as looking downstream★

### RIPARIAN WIDTH

- |                                     |                                     |                   |
|-------------------------------------|-------------------------------------|-------------------|
| L                                   | R                                   | (Per Bank)        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Wide >10 m        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Moderate 5 – 10 m |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Narrow <5 m       |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | None              |

### FLOODPLAIN QUALITY

- |                                     |                                     |                                     |
|-------------------------------------|-------------------------------------|-------------------------------------|
| L                                   | R                                   | (Most Predominant per Bank)         |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Mature Forest, Wetland              |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Immature Forest, Shrub or Old Field |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Residential Park, New Field         |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Fenced Pasture                      |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Conservation Tillage                |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Urban or Industrial                 |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Open Pasture, Row Crop              |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Mining or Construction              |

COMMENTS \_\_\_\_\_

### FLOW REGIME (At Time of Evaluation)

- |   |  |
|---|--|
| <input type="checkbox"/> Stream Flowing                                     | <input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent) |
| <input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial) | <input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)          |

COMMENTS \_\_\_\_\_

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

- |                               |   |                              |                              |
|-------------------------------|---|------------------------------|------------------------------|
| <input type="checkbox"/> None | <input type="checkbox"/> 1.0            | <input type="checkbox"/> 2.0 | <input type="checkbox"/> 3.0 |
| <input type="checkbox"/> 0.5  | <input checked="" type="checkbox"/> 1.5 | <input type="checkbox"/> 2.5 | <input type="checkbox"/> >3  |

### STREAM GRADIENT ESTIMATE

- |   |  |   |   |  |
|---|--|---|---|--|
| <input type="checkbox"/> Flat (0.5 ft/100 ft) | <input checked="" type="checkbox"/> Flat to Moderate | <input type="checkbox"/> Moderate (2 ft/100 ft) | <input type="checkbox"/> Moderate to Severe | <input type="checkbox"/> Severe (10 ft/100 ft) |
|---|--|---|---|--|

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**

**QHEI PERFORMED?** ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

**DOWNSTREAM DESIGNATED USE(S)**

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USQS Quadrangle Name Francisco NRCS Soil Map Page 44 NRCS Soil Map Stream Order \_\_\_\_\_

County Gibson Township/City Columbia

**MISCELLANEOUS**

Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 8.16.05 Quantity 0.24"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%

Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_

Additional comments/description of pollution impacts Row crop agriculture adjacent to both sides of the stream

**BIOTIC EVALUATION**

Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

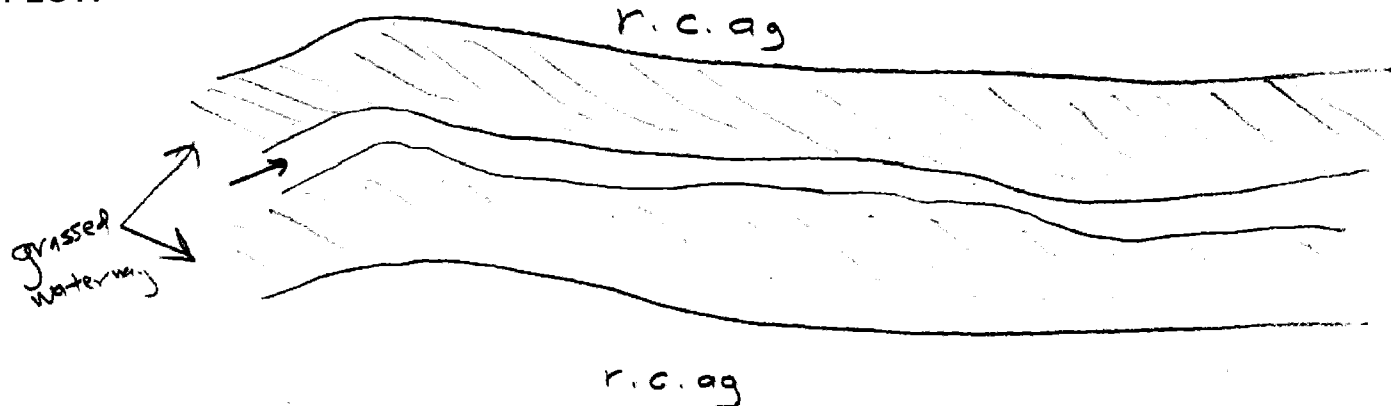
Frogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW





# OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

Sample #	bioSample #	Stream Name	Location
		sec1-s39r1	Section 1 of proposed I-69 corridor
Surveyor	Sample Date	County	Macro Sample Type
MP, EC	8.17.05	Gibson	N/A
<input checked="" type="checkbox"/> Habitat Complete			QHEI Score: 32

## 1 – Substrate (20 points maximum)

Substrate Score: 13

### Check 1 Predominant Pool & 1 Predominant Riffle

Check all that are present		P=Pool, R=Riffle	
Predominant	Present	Predominant	Present
P R	P R	P R	P R
<input type="checkbox"/> Bldrs/Slabs (10)	<input type="checkbox"/>	<input checked="" type="checkbox"/> Hardpan (4)	<input checked="" type="checkbox"/>
<input type="checkbox"/> Boulders (9)	<input type="checkbox"/>	<input type="checkbox"/> Detritus (3)	<input checked="" type="checkbox"/>
<input type="checkbox"/> Cobble (8)	<input type="checkbox"/>	<input type="checkbox"/> Muck (2)	<input type="checkbox"/>
<input checked="" type="checkbox"/> Gravel (7)	<input type="checkbox"/>	<input type="checkbox"/> Silt (2)	<input checked="" type="checkbox"/>
<input type="checkbox"/> Sand (6)	<input type="checkbox"/>	<input type="checkbox"/> Sludge (1)	<input type="checkbox"/>
<input type="checkbox"/> Bedrock (5)	<input type="checkbox"/>	<input type="checkbox"/> Artificial (0)	<input type="checkbox"/>

### Substrate Quality (check only 1, or check 2 and AVERAGE)

Substrate Origin		Embeddedness	
<input type="checkbox"/> Limestone (1)	<input type="checkbox"/> Hardpan (0)	<input type="checkbox"/> Lacustrine (0)	
<input checked="" type="checkbox"/> Tilts (1)	<input type="checkbox"/> Sandstone (0)	<input type="checkbox"/> Shale (-1)	
<input type="checkbox"/> Wetlands (0)	<input type="checkbox"/> Rip/Rap (0)	<input type="checkbox"/> Coal fines (-2)	
Silt Cover			
<input type="checkbox"/> Silt heavy (-2)		<input type="checkbox"/> Extensive (-2)	
<input type="checkbox"/> Silt moderate (-1)		<input type="checkbox"/> Moderate (-1)	
<input checked="" type="checkbox"/> Silt normal (0)		<input type="checkbox"/> Low/Normal (0)	
<input type="checkbox"/> Silt free (1)		<input checked="" type="checkbox"/> None (1)	

NOTE: Ignore sludge originating from point sources; score based on natural substrates

☐ >4 substrates present (2)

Comments:

## 2 – Instream Cover (20 points maximum)

Instream Cover Score: 0

### Type (check ALL that apply)

<input type="checkbox"/> Undercut banks (1)	<input type="checkbox"/> Deep pools (2)	<input type="checkbox"/> Oxbows (1)
<input type="checkbox"/> Overhanging vegetation (1)	<input type="checkbox"/> Rootwads (1)	<input type="checkbox"/> Aquatic macrophytes (1)
<input type="checkbox"/> Shallows (In slow water) (1)	<input type="checkbox"/> Boulders (1)	<input type="checkbox"/> Logs and woody debris (1)
<input type="checkbox"/> Rootmats (1)	Comments: all portions of stream with instream cover are <20cm in depth, so no value given	

### Amount (check only 1, or 2 and AVERAGE)

<input type="checkbox"/> Extensive >75% (11)
<input checked="" type="checkbox"/> Moderate 25-75% (7)
<input type="checkbox"/> Sparse 5-25% (3)
<input type="checkbox"/> Nearly absent <5% (1)

## 3 – Channel Morphology (20) (check only one per category, OR two and AVERAGE)

Channel Score: 5

Sinuosity	Development	Channelization	Stability	Modifications/Other
<input type="checkbox"/> High (4)	<input type="checkbox"/> Excellent (7)	<input type="checkbox"/> None (6)	<input type="checkbox"/> High (3)	<input checked="" type="checkbox"/> Snagging
<input type="checkbox"/> Moderate (3)	<input type="checkbox"/> Good (5)	<input type="checkbox"/> Recovered (4)	<input type="checkbox"/> Moderate (2)	<input type="checkbox"/> Relocation
<input checked="" type="checkbox"/> Low (2)	<input type="checkbox"/> Fair (3)	<input type="checkbox"/> Recovering (3)	<input checked="" type="checkbox"/> Low (1)	<input checked="" type="checkbox"/> Canopy removal
<input type="checkbox"/> None (1)	<input checked="" type="checkbox"/> Poor (1)	<input checked="" type="checkbox"/> Recent or no recovery (1)		<input type="checkbox"/> Dredging
Comments:				<input type="checkbox"/> One side channel modifications
				<input type="checkbox"/> Impound
				<input type="checkbox"/> Islands
				<input type="checkbox"/> Leveed
				<input checked="" type="checkbox"/> Bank shaping

## 4 – Riparian Zone & Bank Erosion (10 points maximum)

Riparian Score: 4

### Left/Right banks looking downstream (for each category, check only one per bank, OR two per bank and AVERAGE)

Riparian width	Erosion/Runoff-Floodplain Quality (past 100 ft Riparian)	Bank Erosion
L R (per bank)	L R (most predominant per bank)	L R (per bank)
<input type="checkbox"/> Wide >50 m (4)	<input type="checkbox"/> Forest, swamp (3)	<input checked="" type="checkbox"/> None or little (3)
<input type="checkbox"/> Moderate 10-50 m (3)	<input checked="" type="checkbox"/> Shrub or old field (2)	<input type="checkbox"/> Moderate (2)
<input type="checkbox"/> Narrow 5-10m (2)	<input type="checkbox"/> Residential, park, new field (1)	<input type="checkbox"/> Heavy/severe (1)
<input type="checkbox"/> Very narrow <5m (1)	<input type="checkbox"/> Fenced pasture (1)	
<input checked="" type="checkbox"/> None (0)	Comments:	

## 5a – Pool/Glide Quality (12 points maximum)

Pool/Glide Score: 0

Max Pool Depth (check one)	Morphology (check only one, OR check two and AVERAGE)	Pool/Run/Riffle Current Velocity (check all that apply)
<input type="checkbox"/> >1 m (6)	<input type="checkbox"/> Pool width > riffle width (2)	<input type="checkbox"/> Eddies (1)
<input type="checkbox"/> 0.7-1 m (4)	<input type="checkbox"/> Pool width = riffle width (1)	<input type="checkbox"/> Fast (1)
<input type="checkbox"/> 0.4-0.7 m (2)	<input type="checkbox"/> Pool width < riffle width (0)	<input type="checkbox"/> Moderate (1)
<input type="checkbox"/> 0.2-0.4 m (1)		<input type="checkbox"/> Slow (1)
<input checked="" type="checkbox"/> <0.2 m (pool = 0)	Comments: No pools	<input checked="" type="checkbox"/> No pool (0)

## 5b – Riffle/Run Quality (8) (check only one per category, OR two and AVERAGE)

Riffle/Run Score: 0

Riffle/Run Depth (check one)	Riffle/Run Substrate	Riffle/Run Embeddedness
<input type="checkbox"/> Generally >10 cm, Max > 50 cm (4)	<input type="checkbox"/> Stable – eg. cobble, boulder (2)	<input type="checkbox"/> Extensive (-1)
<input type="checkbox"/> Generally >10 cm, Max < 50 cm (3)	<input type="checkbox"/> Mod. stable – eg. pea gravel (1)	<input type="checkbox"/> Moderate (0)
<input type="checkbox"/> Generally 5-10 cm (1)	<input type="checkbox"/> Unstable – eg. sand, gravel (0)	<input type="checkbox"/> Normal/Low (1)
<input checked="" type="checkbox"/> Generally <5 cm (riffle = 0)	Comments: No riffle/run complexes	<input type="checkbox"/> None (2)
		<input checked="" type="checkbox"/> No riffle (0)

## 6 – Gradient (10 points maximum)

Gradient Score: 10

Average width: 1.5	Gradient: 26.4 (ft/mile)	Drainage Area: 5.11 (square miles)
Comments: No information on field data sheet		





## OWQ Biological Studies QHEI (Qualitative Habitat Evaluation Index)

<b>Sample #</b>	<b>bioSample #</b>	<b>Stream Name</b>	<b>Location</b>			
		sec1-s39r1	Section 1 of proposed I-69 corridor			
<b>Surveyor</b>	<b>Sample Date</b>	<b>County</b>	<b>Macro Sample Type</b>	<input checked="" type="checkbox"/> <b>Habitat Complete</b>	<b>QHEI Score:</b>	<b>32</b>
MP, EC	8.17.05	Gibson	N/A			

### Impacts/Miscellaneous

#### Major Suspected Impacts (check all that apply)

- |  |  |
|--|--|
| <input type="checkbox"/> None                    | <input type="checkbox"/> Suburban                  |
| <input type="checkbox"/> Industrial              | <input checked="" type="checkbox"/> Channelization |
| <input type="checkbox"/> WWTP                    | <input type="checkbox"/> Riparian Removal          |
| <input checked="" type="checkbox"/> Agricultural | <input type="checkbox"/> Flow Alteration           |
| <input type="checkbox"/> Livestock               | <input type="checkbox"/> CSOs                      |
| <input type="checkbox"/> Silviculture            | <input type="checkbox"/> Mining                    |
| <input type="checkbox"/> Construction            | <input type="checkbox"/> Landfills                 |
| <input type="checkbox"/> Urban Runoff            | <input type="checkbox"/> Natural                   |

Pollution Impact Comments:

#### Miscellaneous QHEI Information

Subjective Rating (1-10):	5	% Riffle:		<i>Is reach representative of stream?</i>
Aesthetic Rating (1-10):	5	% Run:	90	
Canopy Cover (% Open):	100%	% Glide:		
		% Pool:	10	Yes

General QHEI Notes:



# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

35

SITE NAME/LOCATION <b>I-69 Section 1</b>		RIVER BASIN <b>Highland Pigeon (#05140202)</b>		DRAINAGE AREA (mi <sup>2</sup> ) <b>0.22</b>	
SITE NUMBER <b>sec1-s41</b>		RIVER BASIN <b>Highland Pigeon (#05140202)</b>		DRAINAGE AREA (mi <sup>2</sup> ) <b>0.22</b>	
LENGTH OF STREAM REACH (ft) <b>200'</b>		LAT <b>_____</b> LONG <b>_____</b>		RIVER CODE <b>_____</b> RIVER MILE <b>_____</b>	
DATE <b>8.17.05</b>		SCORER <b>Mark Prancus, Erica Christensen</b>		COMMENTS <b>Swale north of 300 S, tributary to West Fork Keg Creek</b>	

NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]	<input checked="" type="checkbox"/>	<input type="checkbox"/> SILT [3 pt]	<b>50</b>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	<input type="checkbox"/>	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<b>_____</b>
<input type="checkbox"/> BEDROCK [16 pt]	<input type="checkbox"/>	<input type="checkbox"/> FINE DETRITUS [3 pts]	<b>_____</b>
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	<input checked="" type="checkbox"/>	<input type="checkbox"/> CLAY OR HARDPAN [0 pt]	<b>50</b>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	<input type="checkbox"/>	<input type="checkbox"/> MUCK [0 pts]	<b>_____</b>
<input type="checkbox"/> SAND (<2mm) [6 pts]	<input type="checkbox"/>	<input type="checkbox"/> ARTIFICIAL [3 pts]	<b>_____</b>

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES

(A)

3

TOTAL NUMBER OF  
SUBSTRATE TYPES

(B)

2

HHEI  
Metric  
Points

Substrate  
Max = 40

5

A+B

Pool Depth  
Max = 30

0

Bankfull  
Width  
Max = 30

30

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters)

0 cm

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input checked="" type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

COMMENTS **4.3, 4.0, 5.3 meters** AVERAGE BANKFULL WIDTH (meters)

4.5 m

This information must also be completed

☆NOTE: River Left (L) and Right (R) as looking downstream☆

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)	L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland	<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field	<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture	<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS \_\_\_\_\_

### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	<input type="checkbox"/> (Check ONLY one box)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS \_\_\_\_\_

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Francisco NRCS Soil Map Page 44 NRCS Soil Map Stream Order \_\_\_\_\_County Gibson Township/City Columbia**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 8.16.05 Quantity 0.24"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

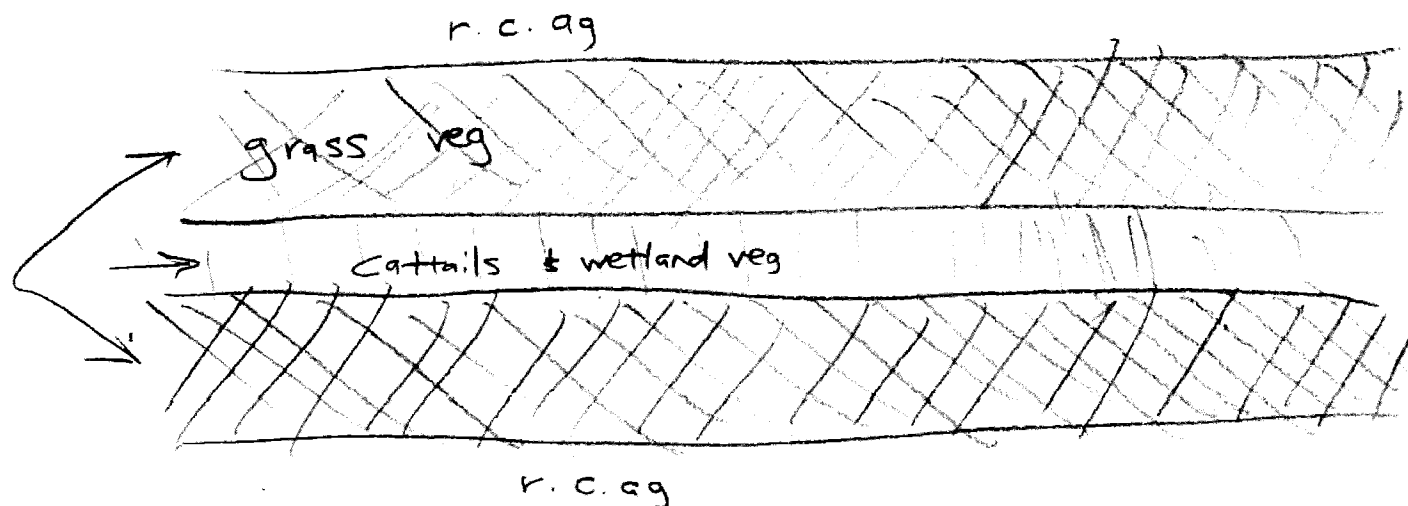
Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_Additional comments/description of pollution impacts Row crops adjacent to both sides of the stream**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW





SITE NAME/LOCATION I-69 Section 1SITE NUMBER sec1-s42RIVER BASIN Highland Pigeon (#05140202)DRAINAGE AREA (mi<sup>2</sup>) 0.04LENGTH OF  
STREAM REACH (ft) 200'

LAT \_\_\_\_\_

LONG \_\_\_\_\_

RIVER  
CODE \_\_\_\_\_RIVER  
MILE \_\_\_\_\_DATE 8.17.05SCORER Mark PrancusCOMMENTS Tributary north of I-64, into 26**NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions****STREAM CHANNEL** ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☒ RECOVERING ☐ RECENT OR NO RECOVERY**MODIFICATIONS**

1. **SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.**

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDG SLABS [16 pts]	_____	<input checked="" type="checkbox"/> SILT [3 pt]	<u>50</u>
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]	_____	<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	<u>25</u>
<input type="checkbox"/> BEDROCK [16 pt]	_____	<input type="checkbox"/> FINE DETRITUS [3 pts]	_____
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]	_____	<input type="checkbox"/> CLAY OR HARDPAN [0 pt]	<u>25</u>
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]	_____	<input type="checkbox"/> MUCK [0 pts]	_____
<input type="checkbox"/> SAND (<2mm) [6 pts]	_____	<input type="checkbox"/> ARTIFICIAL [3 pts]	_____

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock**SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES**

(A)

6**TOTAL NUMBER OF  
SUBSTRATE TYPES**

(B)

3**HHEI  
Metric  
Points****Substrate  
Max = 40**9

A+B

2. **MAXIMUM POOL DEPTH (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)**

- |   |   |
|---|---|
| <input type="checkbox"/> >30 centimeters [20 pts] | <input type="checkbox"/> >5 cm – 10 cm [15 pts]                       |
| <input type="checkbox"/> 22.5 – 30 cm [30 pts]    | <input type="checkbox"/> <5 cm [5 pts]                                |
| <input type="checkbox"/> >10 – 22.5 cm [25 pts]   | <input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts] |

**Pool Depth  
Max = 30**0

COMMENTS \_\_\_\_\_ MAXIMUM POOL DEPTH (centimeters)

0 cm

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box)**

- |  |   |
|--|---|
| <input type="checkbox"/> >4.0 meters (>13') [30 pts]                         | <input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8") [15 pts] |
| <input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13') [25 pts]              | <input type="checkbox"/> ≤1.0 m (≤ 3' 3") [5 pts]                 |
| <input checked="" type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts] |   |

**Bankfull  
Width  
Max = 30**20COMMENTS 2.7, 3.1, 3.2 meters AVERAGE BANKFULL WIDTH (meters)3.0 m**RIPARIAN ZONE AND FLOODPLAIN QUALITY****This information must also be completed****★NOTE: River Left (L) and Right (R) as looking downstream★****RIPARIAN WIDTH**

- |                                     |                                     |                   |
|-------------------------------------|-------------------------------------|-------------------|
| L                                   | R                                   | (Per Bank)        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Wide >10 m        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Moderate 5 – 10 m |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Narrow <5 m       |
| <input type="checkbox"/>            | <input type="checkbox"/>            | None              |

**FLOODPLAIN QUALITY**

- |                                     |                                     |                                     |
|-------------------------------------|-------------------------------------|-------------------------------------|
| L                                   | R                                   | (Most Predominant per Bank)         |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Mature Forest, Wetland              |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Immature Forest, Shrub or Old Field |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Residential Park, New Field         |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Fenced Pasture                      |

- |                          |                          |                        |
|--------------------------|--------------------------|------------------------|
| L                        | R                        |                        |
| <input type="checkbox"/> | <input type="checkbox"/> | Conservation Tillage   |
| <input type="checkbox"/> | <input type="checkbox"/> | Urban or Industrial    |
| <input type="checkbox"/> | <input type="checkbox"/> | Open Pasture, Row Crop |
| <input type="checkbox"/> | <input type="checkbox"/> | Mining or Construction |

COMMENTS Trees, red maple, approximately 20' off-center**FLOW REGIME (At Time of Evaluation)**

- |   |  |
|---|--|
| <input type="checkbox"/> Stream Flowing                                     | <input type="checkbox"/> (Check ONLY one box)<br>Moist Channel, Isolated Pools, No Flow (Intermittent) |
| <input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial) | <input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)                                  |

COMMENTS \_\_\_\_\_

**SINUOSITY (Number of bends per 61 m (200 ft) of channel)**

- |                               |   |                              |                              |
|-------------------------------|---|------------------------------|------------------------------|
| <input type="checkbox"/> None | <input checked="" type="checkbox"/> 1.0 | <input type="checkbox"/> 2.0 | <input type="checkbox"/> 3.0 |
| <input type="checkbox"/> 0.5  | <input type="checkbox"/> 1.5            | <input type="checkbox"/> 2.5 | <input type="checkbox"/> >3  |

**STREAM GRADIENT ESTIMATE**

- |   |  |   |   |  |
|---|--|---|---|--|
| <input type="checkbox"/> Flat (0.5 ft/100 ft) | <input checked="" type="checkbox"/> Flat to Moderate | <input type="checkbox"/> Moderate (2 ft/100 ft) | <input type="checkbox"/> Moderate to Severe | <input type="checkbox"/> Severe (10 ft/100 ft) |
|---|--|---|---|--|

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

## DOWNSTREAM DESIGNATED USE(S)

<input type="checkbox"/> WWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> CWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> EWH Name _____	Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Francisco NRCS Soil Map Page 35 NRCS Soil Map Stream Order 1County Gibson Township/City Columbia**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 8.16.05 Quantity 0.24"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 25%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

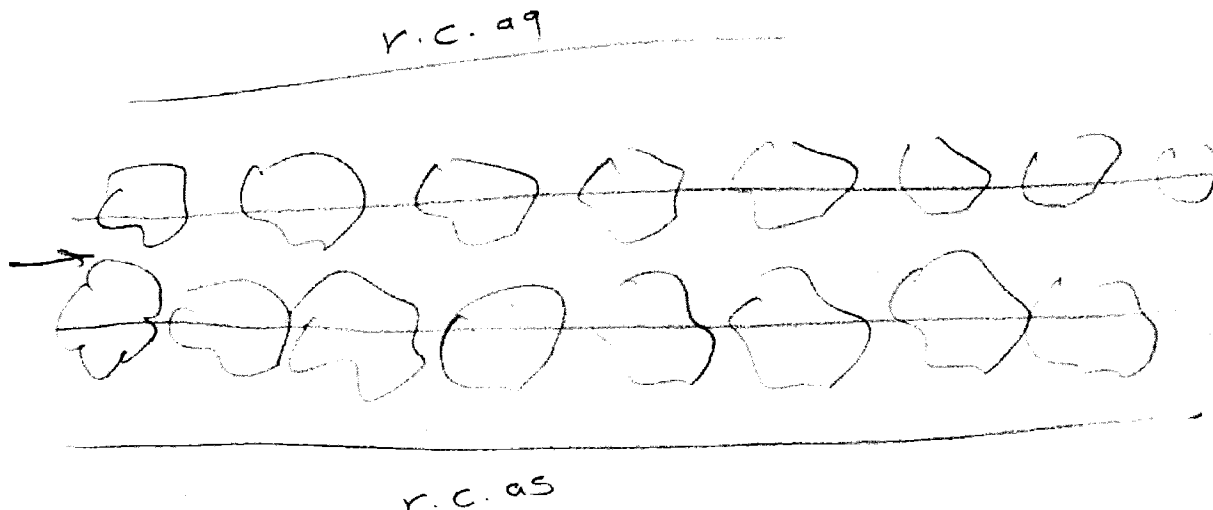
Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_Additional comments/description of pollution impacts Row crop adjacent to both sides of the stream, beyond a narrow wooded riparian zone**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

25

SITE NAME/LOCATION **I-69 Section 1**

SITE NUMBER **sec1-s43r1**

RIVER BASIN **Highland Pigeon (#05140202)**

DRAINAGE AREA (mi<sup>2</sup>) **0.10**

LENGTH OF

STREAM REACH (ft) **200'**

LAT

LONG

RIVER  
CODE

RIVER  
MILE

DATE **8.17.05**

SCORER

**Mark Prancus, Erica  
Christensen**

COMMENTS

**Tributary to 26**

**NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PWH Streams” for Instructions**

**STREAM CHANNEL** ☒ **NONE / NATURAL CHANNEL** ☐ **RECOVERED** ☐ **RECOVERING** ☐ **RECENT OR NO RECOVERY**

## MODIFICATIONS

1. **SUBSTRATE (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.**

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> BLDR SLABS [16 pts]		<input type="checkbox"/> SILT [3 pts]	
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input checked="" type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	25
<input type="checkbox"/> BEDROCK [16 pts]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input checked="" type="checkbox"/> CLAY OR HARDPAN [0 pts]	75
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

**SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES**

(A)

3

**TOTAL NUMBER OF  
SUBSTRATE TYPES**

(B)

2

2. **MAXIMUM POOL DEPTH (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)**

- |   |   |
|---|---|
| <input type="checkbox"/> >30 centimeters [20 pts] | <input type="checkbox"/> >5 cm – 10 cm [15 pts]                       |
| <input type="checkbox"/> 22.5 – 30 cm [30 pts]    | <input type="checkbox"/> <5 cm [5 pts]                                |
| <input type="checkbox"/> >10 – 22.5 cm [25 pts]   | <input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts] |

COMMENTS

MAXIMUM POOL DEPTH (centimeters)

0 cm

3. **BANK FULL WIDTH (Measured as the average of 3-4 measurements) (Check ONLY one box)**

- |  |  |
|--|--|
| <input type="checkbox"/> >4.0 meters (>13') [30 pts]                         | <input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts] |
| <input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]               | <input type="checkbox"/> ≤1.0 m (≤3' 3") [5 pts]                 |
| <input checked="" type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts] |  |

COMMENTS **1.0, 1.0, 2.0, 2.2 meters**

AVERAGE BANKFULL WIDTH (meters)

1.6 m

**This information must also be completed**

★NOTE: River Left (L) and Right (R) as looking downstream★

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

### RIPARIAN WIDTH

- |                                     |                                     |                   |
|-------------------------------------|-------------------------------------|-------------------|
| L                                   | R                                   | (Per Bank)        |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Wide >10 m        |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Moderate 5 – 10 m |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Narrow <5 m       |
| <input type="checkbox"/>            | <input type="checkbox"/>            | None              |

### FLOODPLAIN QUALITY

- |                                     |                                     |                                     |
|-------------------------------------|-------------------------------------|-------------------------------------|
| L                                   | R                                   | (Most Predominant per Bank)         |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | Mature Forest, Wetland              |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Immature Forest, Shrub or Old Field |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Residential Park, New Field         |
| <input type="checkbox"/>            | <input type="checkbox"/>            | Fenced Pasture                      |

- |                          |                          |                        |
|--------------------------|--------------------------|------------------------|
| L                        | R                        |                        |
| <input type="checkbox"/> | <input type="checkbox"/> | Conservation Tillage   |
| <input type="checkbox"/> | <input type="checkbox"/> | Urban or Industrial    |
| <input type="checkbox"/> | <input type="checkbox"/> | Open Pasture, Row Crop |
| <input type="checkbox"/> | <input type="checkbox"/> | Mining or Construction |

COMMENTS **Trees, sugar and red maple, approximately 20' off-center**

### FLOW REGIME (At Time of Evaluation)

- |   |  |
|---|--|
| <input type="checkbox"/> Stream Flowing                                     | <input type="checkbox"/> (Check ONLY one box)<br>Moist Channel, Isolated Pools, No Flow (Intermittent) |
| <input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial) | <input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)                                  |

COMMENTS

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

- |                               |                              |   |  |
|-------------------------------|------------------------------|---|--|
| <input type="checkbox"/> None | <input type="checkbox"/> 1.0 | <input type="checkbox"/> 2.0            | <input type="checkbox"/> 3.0           |
| <input type="checkbox"/> 0.5  | <input type="checkbox"/> 1.5 | <input checked="" type="checkbox"/> 2.5 | <input checked="" type="checkbox"/> >3 |

### STREAM GRADIENT ESTIMATE

- |   |   |   |  |  |
|---|---|---|--|--|
| <input type="checkbox"/> Flat (0.5 ft/100 ft) | <input type="checkbox"/> Flat to Moderate | <input type="checkbox"/> Moderate (2 ft/100 ft) | <input checked="" type="checkbox"/> Moderate to Severe | <input type="checkbox"/> Severe (10 ft/100 ft) |
|---|---|---|--|--|

**HHEI  
Metric  
Points**

**Substrate  
Max = 40**

5

A+B

**Pool Depth  
Max = 30**

0

**Bankfull  
Width  
Max = 30**

20



**ADDITIONAL STREAM INFORMATION (This information must also be completed)**

**QHEI PERFORMED?** ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

**DOWNSTREAM DESIGNATED USE(S)**

☐ WWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ CWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_  
☐ EWH Name \_\_\_\_\_ Distance from Evaluated Stream \_\_\_\_\_

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**

USQS Quadrangle Name Francisco NRCS Soil Map Page 35 NRCS Soil Map Stream Order \_\_\_\_\_

County Gibson Township/City Columbia

**MISCELLANEOUS**

Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 8.16.05 Quantity 0.24"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 0%

Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results)

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_

Additional comments/description of pollution impacts \_\_\_\_\_

**BIOTIC EVALUATION**

Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Frogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

FLOW





# Primary Headwater Habitat Evaluation Form

HHEI Score (sum of metrics 1, 2, 3):

35

SITE NAME/LOCATION		I-69 Section 1	
SITE NUMBER	Sec 1-s44	RIVER BASIN	Highland Pigeon (#05140202)
LENGTH OF STREAM REACH (ft)		DRAINAGE AREA (m <sup>2</sup> )	
200'		0.25	
DATE	8.17.05	RIVER CODE	RIVER MILE
SCORER	Mark Prancus, Erica Christensen	COMMENTS	Swale north of 250 S, tributary to West Fork Keg Creek

NOTE: Complete All Items On This Form – Refer to “Field Evaluation Manual for Ohio’s PHWH Streams” for Instructions

STREAM CHANNEL ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☐ RECOVERING ☒ RECENT OR NO RECOVERY

## MODIFICATIONS

1. **SUBSTRATE** (Estimate percent of every type of substrate present. Check ONLY two predominant substrate TYPE boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE	PERCENT	TYPE	PERCENT
<input type="checkbox"/> Bldr SLABS [16 pts]		<input checked="" type="checkbox"/> SILT [3 pt]	50
<input type="checkbox"/> BOULDER (>256 mm) [16 pts]		<input type="checkbox"/> LEAF PACK/WOODY DEBRIS [3 pts]	
<input type="checkbox"/> BEDROCK [16 pt]		<input type="checkbox"/> FINE DETRITUS [3 pts]	
<input type="checkbox"/> COBBLE (65-256 mm) [12 pts]		<input type="checkbox"/> CLAY OR HARDPAN [0 pt]	50
<input type="checkbox"/> GRAVEL (2-64 mm) [9 pts]		<input type="checkbox"/> MUCK [0 pts]	
<input type="checkbox"/> SAND (<2mm) [6 pts]		<input type="checkbox"/> ARTIFICIAL [3 pts]	

Total of Percentages of  
Bldr Slabs, Boulder, Cobble, Bedrock

SCORE OF TWO MOST PREDOMINATE  
SUBSTRATE TYPES

(A)

3

TOTAL NUMBER OF  
SUBSTRATE TYPES

(B)

2

HHEI  
Metric  
Points

Substrate  
Max = 40

5  
A+B

2. **MAXIMUM POOL DEPTH** (Measure the maximum pool depth within the 61 meter (200 ft) evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or stormwater pipes) (Check ONLY one box)

<input type="checkbox"/> >30 centimeters [20 pts]	<input type="checkbox"/> >5 cm – 10 cm [15 pts]
<input type="checkbox"/> 22.5 – 30 cm [30 pts]	<input type="checkbox"/> <5 cm [5 pts]
<input type="checkbox"/> >10 – 22.5 cm [25 pts]	<input checked="" type="checkbox"/> NO WATER OR MOIST CHANNEL [0 pts]

Pool Depth  
Max = 30

0

COMMENTS MAXIMUM POOL DEPTH (centimeters)

0 cm

3. **BANK FULL WIDTH** (Measured as the average of 3-4 measurements) (Check ONLY one box)

<input checked="" type="checkbox"/> >4.0 meters (>13') [30 pts]	<input type="checkbox"/> >1.0 m – 1.5 m (>3' 3" – 4' 8" [15 pts]
<input type="checkbox"/> >3.0 m – 4.0 m (>9' 7" – 13' [25 pts]	<input type="checkbox"/> ≤1.0 m (≤ 3' 3") [5 pts]
<input type="checkbox"/> >1.5 m – 3.0 m (>9' 7" – 4' 8") [20 pts]	

Bankfull  
Width  
Max = 30

30

COMMENTS 4.3, 4.0, 5.3 meters AVERAGE BANKFULL WIDTH (meters)

4.5 m

This information must also be completed

## RIPARIAN ZONE AND FLOODPLAIN QUALITY

☆NOTE: River Left (L) and Right (R) as looking downstream☆

### RIPARIAN WIDTH

L	R	(Per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Wide >10 m
<input type="checkbox"/>	<input type="checkbox"/>	Moderate 5 – 10 m
<input type="checkbox"/>	<input type="checkbox"/>	Narrow <5 m
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	None

### FLOODPLAIN QUALITY

L	R	(Most Predominant per Bank)
<input type="checkbox"/>	<input type="checkbox"/>	Mature Forest, Wetland
<input type="checkbox"/>	<input type="checkbox"/>	Immature Forest, Shrub or Old Field
<input type="checkbox"/>	<input type="checkbox"/>	Residential Park, New Field
<input type="checkbox"/>	<input type="checkbox"/>	Fenced Pasture

L	R	
<input type="checkbox"/>	<input type="checkbox"/>	Conservation Tillage
<input type="checkbox"/>	<input type="checkbox"/>	Urban or Industrial
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Open Pasture, Row Crop
<input type="checkbox"/>	<input type="checkbox"/>	Mining or Construction

COMMENTS

### FLOW REGIME (At Time of Evaluation)

<input type="checkbox"/> Stream Flowing	(Check ONLY one box)
<input type="checkbox"/> Subsurface Flow with Isolated Pools (Interstitial)	<input type="checkbox"/> Moist Channel, Isolated Pools, No Flow (Intermittent)
	<input checked="" type="checkbox"/> Dry Channel, No Water (Ephemeral)

COMMENTS

### SINUOSITY (Number of bends per 61 m (200 ft) of channel)

<input checked="" type="checkbox"/> None	<input type="checkbox"/> 1.0	<input type="checkbox"/> 2.0	<input type="checkbox"/> 3.0
<input type="checkbox"/> 0.5	<input type="checkbox"/> 1.5	<input type="checkbox"/> 2.5	<input type="checkbox"/> >3

### STREAM GRADIENT ESTIMATE

<input type="checkbox"/> Flat (0.5 ft/100 ft)	<input checked="" type="checkbox"/> Flat to Moderate	<input type="checkbox"/> Moderate (2 ft/100 ft)	<input type="checkbox"/> Moderate to Severe	<input type="checkbox"/> Severe (10 ft/100 ft)
---	--	---	---	--

**ADDITIONAL STREAM INFORMATION (This information must also be completed)**QHEI PERFORMED? ☐ Yes ☒ No QHEI Score \_\_\_\_\_ If Yes, Attach Completed QHEI Form

DOWNSTREAM DESIGNATED USE(S) \_\_\_\_\_

<input type="checkbox"/> WWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> CWH Name _____	Distance from Evaluated Stream _____
<input type="checkbox"/> EWH Name _____	Distance from Evaluated Stream _____

**MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION**USQS Quadrangle Name Francisco NRCS Soil Map Page 44 NRCS Soil Map Stream Order \_\_\_\_\_County Gibson Township/City Columbia**MISCELLANEOUS**Base Flow Conditions? ☒ Yes ☐ No Date of Last Precipitation 8.16.05 Quantity 0.24"

Photograph Information \_\_\_\_\_

Elevated Turbidity? ☐ Yes ☒ No Canopy (% open) 100%Were samples collected for water chemistry? ☐ Yes ☒ No Lab Number (Note lab sample no. or id and attach results) \_\_\_\_\_

Field Measures - Temp (°C) \_\_\_\_\_ Dissolved Oxygen (mg/l) \_\_\_\_\_ pH (S.U.) \_\_\_\_\_ Conductivity (µmhos/cm) \_\_\_\_\_

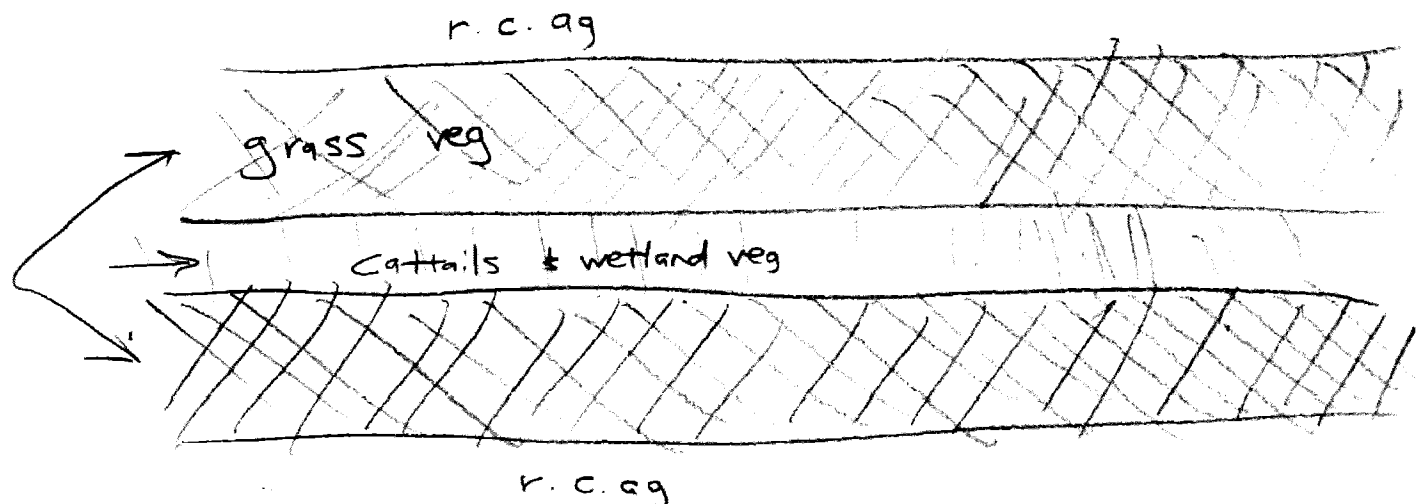
Is the sampling reach representative of the stream? ☒ Yes ☐ No If not, please explain \_\_\_\_\_Additional comments/description of pollution impacts Row crops adjacent to both sides of the stream**BIOTIC EVALUATION**Performed? ☐ Yes ☒ No (If Yes, record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)Fish Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Salamanders Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ NoFrogs or Tadpoles Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No Aquatic Macroinvertebrates Observed? ☐ Yes ☐ No Voucher? ☐ Yes ☐ No

Comments Regarding Biology \_\_\_\_\_

**DRAWINGS AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed)**

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location.

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# **401 WQC APPLICATION ATTACHMENT #15**

**Wetland Assessment Data Sheets  
(InWRAP)**

# I-69 Wetland Quality Assessment Profile

Date Report Generated: 11/28/2006  
Wetland site: Section 1  
Data reference #: W01 Wetland Impact #1  
Date of site visit: 08/09/05  
Total wetland area: 0.055 acres

<b>Polygon Information</b>	
Polygon ID	0
Polygon Size (acres)	0.055
Wetland Community Type	FF
<b>Red Flag (Special) Indicators</b>	
Special Hydrologic Conditions	N
Special Community Type	N
Rare-Threatened-Endangered Species	N
<b>Animal Habitat Measures</b>	
Wetland size and connectivity	1
Surrounding land use	2
Standing water	1
Dead woody material	3
Zonation and interspersion	1
Stratification	3
Tree canopy	3
Mature trees	1
<b>Animal Habitat Measure Score (min = 8, max = 24,</b>	<b>15</b>
<b>Animal Habitat Measure Rating</b>	<b>fair</b>
<b>Botanical Measures (all except exotics dependent upon community type)</b>	
Number of dominant plant taxa observed	1
Conservatism rating	1
Total hydrophytic taxa observed	2
Number of indicator taxa	1
Exotic species rating	3
<b>Botanical Measure Score (min = 5, max = 15)</b>	<b>8</b>
<b>Botanical Measure Rating</b>	<b>poor</b>
<b>Hydrology Measures</b>	
Water quality protection (= no. of yes answers)	3
Flood and storm water storage (= no. of yes answers)	1
<b>Site/Hydrology Score (min = 11, max = 33)</b>	<b>19</b>
<b>Site/Hydrology Rating</b>	<b>fair</b>

## In-WRAP Summary Sheet

Date Report Generated: 8-26-05  
Wetland site name: Seel-W01  
Data Reference # \_\_\_\_\_  
Date of Site Visit: 8-4-05  
NWI polygons in Site (quadrangle and NWI id. numbers): \_\_\_\_\_

### TIER 1 SUMMARY:

- a. Total wetland area (hectares): 0.02023 hectares (0.05 acres)  
b. Wetland size and connectivity - contribution to animal habitat:  
☐ Valuable ☐ More Favorable ☐ Favorable ☒ Neutral  
c. Surrounding land use - numerical rank (max. = 1): 0.46  
d. Value surrounding area adds to animal habitat: ☐ Valuable ☒ Favorable ☐ Low

### TIER 2 SUMMARY

NWI Polygon Id. \_\_\_\_\_

- a. Indiana Wetland community type: Floodplain Forest  
b. Standing water - contribution to animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
c. Disturbances to site: detaching roads  
d. Exotic species rating: ☒ Good ☐ Medium ☐ Poor  
e. Special Hydrologic Conditions Observed: none  
f. Special Community Type: none  
g. Rare-Threatened-Endangered Species: none  
h. Polygon Quality Descriptor: ☐ Good ☒ Medium ☐ Poor

### TIER 3A SUMMARY

- a. Dead woody material as indicator of animal habitat: ☒ Valuable ☐ Favorable ☐ Neutral  
b. Water quality protection - numerical rank (6 max.): 3 Rating: ☐ Good ☒ Medium ☐ Poor  
c. Flood and storm water storage - numerical rank (5 max.): 1 Rating: ☐ Good ☐ Medium ☒ Poor

### TIER 3B SUMMARY

- a. Zonation and interspersed as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
b. Stratification as indicator of animal habitat: ☒ Valuable ☐ Neutral  
c. Number of dominant plant taxa observed: 4 Rating: ☐ Good ☐ Medium ☒ Poor  
d. Average coefficient of conservatism: 3.25 Rating: ☐ Good ☐ Medium ☒ Poor  
e. Tree canopy as indicator of animal habitat: ☒ Valuable ☐ Neutral  
f. Mature trees as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
g. Total hydrophytic taxa observed: 20 Rating: ☐ Good ☒ Medium ☐ Poor  
h. Number of indicator taxa: 3 Rating: ☐ Good ☐ Medium ☒ Poor



Indiana Wetland Routine Assessment Protocol

Project Data Reference # 03-07-30 / 00  
TERG May 2000

Tier 1: Assessment Overview

1.1 Site Identification:

Wetland site name: SEC1-W01

Ownership (if known): na

USGS Topographic Quadrangle(s): Elberfeld

USGS Watershed map 14-Digit HUC: 06140202020050

Identify each NWI Polygon within the Wetland Site (Polygon specific data)

NWI Polygon ID Number					
Cowardin Classification	<u>PEB1C-A</u>				
Polygon Size (hectares)	<u>0.02023</u>				

NWI Polygon ID Number					
Cowardin Classification					
Polygon Size (hectares)					

1.2 Site Visit:

Team members: Enca Christensen, Mark Unreinle

Agency: JENew

Date assessed: 8-4-05 Time assessed: 12:40pm

Weather conditions: hot humid, midland sunny

Note any unusual weather events that may have influenced the current conditions within this wetland system (e.g. recent heavy rains, an unusually dry season, an especially early spring, etc.):

none

1.3 Wetland Size:

Size of site under assessment: 0.0202 hectares = 0.05

Size of total wetland complex (all continuous wetland polygons):

1.4 Site Setting:

Degree of isolation from other wetlands or wetland complexes:

- ☐ The site is connected upstream and downstream with other wetlands
- ☐ The site is only connected upstream with other wetlands
- ☐ The site is only connected downstream with other wetlands
- ☐ Other wetlands are nearby (within 0.25 mile) but not connected
- ☒ The wetland site is isolated

General assessment of adjacent land use / land cover in the area within 50 meters of the perimeter of the wetland site (indicate the % abundance of each type):

0.6 60% Native Vegetation - woodland  
Native Vegetation - old field / scrub  
0.02 10% Agricultural - tilled  
0.04 10% Agricultural - pasture  
Recreation - green space, mowed

20% Road / highway / railroad bed / parking lot  
Industrial  
Residential - single family  
Commercial or multifamily residential

NWI Polygon # \_\_\_\_\_  
(see table on page one)

Data Reference # 03030100 InWRAP, TERG May 2000  
1-wd

**Tier 2 Individual Polygon: Preliminary Assessment** (to be completed on-site for each NWI polygon present in the wetland)

**2.1 Wetland Geomorphic Setting and Surface Water Flow (check one):**

☒ Depressional ☐ Slope ☐ Floodplain ☐ Lacustrine  
☐ Riverine (within the river/stream banks)

**2.2 Presence of Standing Water:**

Is standing water ~~normally~~ present in the polygon? no

• If standing water is present, is the water greater than 2 meters in depth? \_\_\_\_\_

Is standing water normally present in an adjacent polygon? n/a

**2.3 Apparent Hydroperiod (check one):**

☐ Permanently Flooded ☐ Artificially Flooded  
☒ Seasonally Flooded  
☐ Saturated (surface water seldom present) ☐ Artificially Drained

**2.4 Soil Type:**

☐ Organic (i.e. peat, etc.) ☒ Mineral ☐ Both Mineral and Organic Present

**2.5 Wetland Community Type for this NWI polygon (see Key to Wetland Communities of Indiana):**

Floodplain Forest

**2.6 Disturbances of Hydrology (check all that apply):**

☒ Ditching ☐ Culvert  
☐ Tiles ☐ Other Human Disturbances to the  
☐ Dams Hydrology (explain):  
☒ Road or Railroad Embankment

**2.7 Presence of Invasive Exotics (Score as: S = Scattered, F = Frequent, or C = Common):** None

☐ Garlic Mustard ☐ Glossy Buckthorn  
☐ Phragmites ☐ Reed canary grass  
☐ Purple Loosestrife ☐ Other (list): \_\_\_\_\_

**2.8 Presence of Special Hydrologic Conditions (i.e. seeps, wet slopes, floating mat):**

n/a

**2.9 Presence of Special Community Types:** n/a

☐ Bog ☐ Fen ☐ Wet Sand / Muck Flats or Marl Seeps

**2.10 Presence of Known Federal or Indiana Rare, Threatened or Endangered Species:** 1/1A

☐ None observed or known to be present  
☐ RTES Present (list): \_\_\_\_\_

**2.11 Wetland Polygon Quality Descriptor (see: Wetland Quality Descriptions and check one):**

☐ Good ☒ Medium ☐ Poor

NWI Polygon # \_\_\_\_\_  
(see table on page one)

Data Reference # 030730/60 InWRAP, TERG May 2000  
1-001

**Tier 2 Individual Polygon: Preliminary Assessment** (to be completed on-site for each NWI polygon present in the wetland)

**2.1 Wetland Geomorphic Setting and Surface Water Flow (check one):**

\_\_\_\_\_ Depressional \_\_\_\_\_ Slope \_\_\_\_\_ Floodplain \_\_\_\_\_ Lacustrine  
\_\_\_\_\_ Riverine (within the river/stream banks)

**2.2 Presence of Standing Water:**

Is standing water normally present in the polygon? \_\_\_\_\_

- If standing water is present, is the water greater than 2 meters in depth? \_\_\_\_\_

Is standing water normally present in an adjacent polygon? \_\_\_\_\_

**2.3 Apparent Hydroperiod (check one):**

\_\_\_\_\_ Permanently Flooded \_\_\_\_\_ Artificially Flooded  
\_\_\_\_\_ Seasonally Flooded  
\_\_\_\_\_ Saturated (surface water seldom present) \_\_\_\_\_ Artificially Drained

**2.4 Soil Type:**

\_\_\_\_\_ Organic (i.e. peat, etc.) \_\_\_\_\_ Mineral \_\_\_\_\_ Both Mineral and Organic Present

**2.5 Wetland Community Type for this NWI polygon (see *Key to Wetland Communities of Indiana*):**

**2.6 Disturbances of Hydrology (check all that apply):**

\_\_\_\_\_ Ditching \_\_\_\_\_ Culvert  
\_\_\_\_\_ Tiles \_\_\_\_\_ Other Human Disturbances to the  
\_\_\_\_\_ Dams Hydrology (explain):  
\_\_\_\_\_ Road or Railroad Embankment

**2.7 Presence of Invasive Exotics (Score as: S = Scattered, F = Frequent, or C = Common):**

\_\_\_\_\_ Garlic Mustard \_\_\_\_\_ Glossy Buckthorn  
\_\_\_\_\_ Phragmites \_\_\_\_\_ Reed canary grass  
\_\_\_\_\_ Purple Loosestrife \_\_\_\_\_ Other (list): \_\_\_\_\_

**2.8 Presence of Special Hydrologic Conditions (i.e. seeps, wet slopes, floating mat):**

**2.9 Presence of Special Community Types:**

\_\_\_\_\_ Bog \_\_\_\_\_ Fen \_\_\_\_\_ Wet Sand / Muck Flats or Marl Seeps

**2.10 Presence of Known Federal or Indiana Rare, Threatened or Endangered Species:**

\_\_\_\_\_ None observed or known to be present  
\_\_\_\_\_ RTES Present (list): \_\_\_\_\_

**2.11 Wetland Polygon Quality Descriptor (see: *Wetland Quality Descriptions* and check one):**

\_\_\_\_\_ Good \_\_\_\_\_ Medium \_\_\_\_\_ Poor



NWI Polygon # \_\_\_\_\_ Data Reference # 030730/00 InWRAP, TERG May 2000

Tier 3a Individual Polygon: Rapid Hydrology Indicators 1001

3a.1 Notable Features that influence water quality and hydrology:

Estimated herbaceous plant cover (percentage) in the polygon      100-75      75-50      50-25 X <25

Estimated woody plant foliar coverage in the polygon X 100-75      75-50      50-25      <25

Amount of dead woody material on the soil surface:      nil      scattered X frequent

3a.2 Water Quality Protection Questions:

1. (Y) N Does the wetland have a significant amount of vegetative (specifically herbaceous and woody plant) density to potentially uptake dissolved nutrients?
2. (Y) N Managed water (e.g. municipal or road stormwater drainage, agricultural drainage outlet, industrial or municipal wastewater) is not discharged into the wetland polygon?
3. If wetland in question is a depressional wetland answer 3a, if not, answer 3b  
3a. (Y) N Does the wetland have a shape or flow that allows for the settling out of suspended materials before the water reaches the center of the wetland?  
3b. Y N Is the position of the wetland in the landscape such that run-off is held or filtered before entering a surface body of water down gradient?
4. Y (N) Does the wetland lack steep slopes, large impervious areas, moderate slopes with row cropping, or areas with severe overgrazing within 100 meters of its border?
5. Y (N) Are there recreational lakes, fishable or navigable watercourses, or water supply sources down gradient in the local watershed?
6. (Y) N Is a vegetative buffer area or another wetland polygon (areas where overland flow could be filtered) located upland and adjacent to the wetland polygon? If yes, describe buffer area width and slope.  
width of buffer area (in meters) 7100 approximate slope (percent) 23%  
on west side

3a.3 Flood and Stormwater Storage / Attenuation Questions:

1. If wetland in question is a depressional wetland answer 1a, if not, answer 1b  
1a. (Y) N Around the wetland is there a buffer strip of natural vegetation (forested, old field, scrub) that will slow overland flow into the wetland?  
1b. Y N Is there a significant amount of microtopography or vegetative density within the wetland to reduce the velocity of the water leaving the wetland?
2. Y (N) Does the wetland lack man-made structures that would speed the flow of water from the wetland (tiles, culverts, ditches)?
3. Y (N) Is the flood potential high in the local watershed in which the wetland is located (history of flood damages)?
4. Y (N) Is the wetland located in a watershed where the majority of the upland soils are clayey and impermeable, or is bedrock within two feet of the top of the soil profile?
5. Y (N) Is the wetland located in a local watershed which has highly modified runoff conditions due to existing development?

NWI Polygon # \_\_\_\_\_

Data Reference # 03030/00 InWRAP, TERG May 2000  
1-601

### Tier 3b Individual Polygon: Rapid Vegetation Description

#### 3b.1 Zonation and Interspersion:

1. How many vegetation zones are evident in this wetland polygon? 1

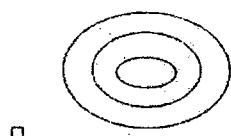
1b. If only one vegetation zone is evident, which best describes the site?

☐ Polygon composed of a mosaic of small vegetation patches, hummocks, or tussocks; heterogeneous textures across the polygon.

☒ Polygon composed of a single vegetation type with more or less uniform texture across the polygon.

2. If more than one vegetation zone is present in the polygon, which interspersion diagram most closely represents the distribution of these zones?

Type One Interspersion



☐

Type Two Interspersion



☐

#### 3b.2 Dominant Plant Species: Vegetation zone A

Observation Point #1

Roll / photo number(s) \_\_\_\_\_  
(Note: V-mark location on the NWI polygon)

What % of the polygon does this vegetative zone occupy?

☐ 10 - 25%

☐ 25 - 50%

☐ 50 - 75%

☐ 75 - 90%

☒ >90%

Is there notable layering/stratification in this vegetation zone? yes

Dominant Herbaceous Species (i.e. covering more than 10 % of the area) listed in order of relative abundance. (Mark with an \* any species that forms extensive monocultural patches).

a proton lug 1  
b persia berry 4  
c \_\_\_\_\_  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant Shrub Species listed in order of relative abundance.

a none  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant Tree Species. Indicate size categories of each tree species: P=pole (3-12" dbh), M=mature (>12")

a Red Maple 5 ☒ P ☐ M  
b Am. Elm 3 ☒ P ☐ M

c \_\_\_\_\_ ☐ P ☐ M  
d \_\_\_\_\_ ☐ P ☐ M

Tree and shrub canopy:

☐ nil

☐ separate, seldom touching

☐ often touching

☒ more or less closed

3.  
4 13  
12  
1

NWI Polygon # \_\_\_\_\_

Data Reference # 030239/00 InWRAP, TERG May 2000

**3b.2 Dominant Plant Species: Vegetation zone B**

Observation Point #2

Roll / photo number(s) \_\_\_\_\_  
(Note: V-mark location on the NWI polygon)

What % of the polygon does this vegetative zone occupy?

☐ 10 - 25%      ☐ 25 - 50%      ☐ 50 - 75%      ☐ 75 - 90%      ☐ >90%

Is there notable layering/stratification in this vegetation zone? \_\_\_\_\_

Dominant Herbaceous Species (i.e. covering more than 10 % of the area) listed in order of relative abundance. (Mark with an \* any species that forms extensive monocultural patches).

a \_\_\_\_\_

e \_\_\_\_\_

b \_\_\_\_\_

f \_\_\_\_\_

c \_\_\_\_\_

g \_\_\_\_\_

d \_\_\_\_\_

h \_\_\_\_\_

Dominant Shrub Species listed in order of relative abundance.

a \_\_\_\_\_

c \_\_\_\_\_

b \_\_\_\_\_

d \_\_\_\_\_

Dominant Tree Species. Indicate size categories of each tree species: P=pole (3-12"dbh), M=mature (>12")

a \_\_\_\_\_ ☐ P ☐ M

c \_\_\_\_\_ ☐ P ☐ M

b \_\_\_\_\_ ☐ P ☐ M

d \_\_\_\_\_ ☐ P ☐ M

Tree and shrub canopy:

☐ nil      ☐ separate, seldom touching      ☐ often touching      ☐ more or less closed

**3b.2 Dominant Plant Species: Vegetation zone C**

Observation Point #3

Roll / photo number(s) \_\_\_\_\_  
(Note: V-mark location on the NWI polygon)

What % of the polygon does this vegetative zone occupy?

☐ 10 - 25%      ☐ 25 - 50%      ☐ 50 - 75%      ☐ 75 - 90%      ☐ >90%

Is there notable layering/stratification in this vegetation zone? \_\_\_\_\_

Dominant Herbaceous Species (i.e. covering more than 10 % of the area) listed in order of relative abundance. (Mark with an \* any species that forms extensive monocultural patches).

a \_\_\_\_\_

e \_\_\_\_\_

b \_\_\_\_\_

f \_\_\_\_\_

c \_\_\_\_\_

g \_\_\_\_\_

d \_\_\_\_\_

h \_\_\_\_\_



NWI Polygon # \_\_\_\_\_

Data Reference # 030734/0 InWRAP, TERG May 2000

Dominant Shrub Species listed in order of relative abundance.

1-009

a \_\_\_\_\_

c \_\_\_\_\_

b \_\_\_\_\_

d \_\_\_\_\_

Dominant Tree Species. Indicate size categories of each tree species: P=pole (3-12"dbh), M=mature (>12")

a \_\_\_\_\_ ☐ P ☐ M

c \_\_\_\_\_ ☐ P ☐ M

b \_\_\_\_\_ ☐ P ☐ M

d \_\_\_\_\_ ☐ P ☐ M

Tree and shrub canopy:

☐ nil

☐ separate, seldom touching

☐ often touching

☐ more or less closed

3b.2 Dominant Plant Species: Vegetation zone D

Observation Point #4

Roll / photo number(s) \_\_\_\_\_

(Note: V-mark location on the NWI polygon)

What % of the polygon does this vegetative zone occupy?

☐ 10 - 25%

☐ 25 - 50%

☐ 50 - 75%

☐ 75 - 90%

☐ >90%

Is there notable layering/stratification in this vegetation zone? \_\_\_\_\_

Dominant Herbaceous Species (i.e. covering more than 10 % of the area) listed in order of relative abundance. (Mark with an \* any species that forms extensive monocultural patches).

a \_\_\_\_\_

e \_\_\_\_\_

b \_\_\_\_\_

f \_\_\_\_\_

c \_\_\_\_\_

g \_\_\_\_\_

d \_\_\_\_\_

h \_\_\_\_\_

Dominant Shrub Species listed in order of relative abundance.

a \_\_\_\_\_

c \_\_\_\_\_

b \_\_\_\_\_

d \_\_\_\_\_

Dominant Tree Species. Indicate size categories of each tree species: P=pole (3-12"dbh), M=mature (>12")

a \_\_\_\_\_ ☐ P ☐ M

c \_\_\_\_\_ ☐ P ☐ M

b \_\_\_\_\_ ☐ P ☐ M

d \_\_\_\_\_ ☐ P ☐ M

Tree and shrub canopy:

☐ nil

☐ separate, seldom touching

☐ often touching

☐ more or less closed

3b.3 Other remarks (include personal comments about what adds to or detracts from the quality of this wetland site).

adds: trees of moderate size no exotics, forested area to the west  
ditches as on N & S, road to the east

# Sec1-w01

Common Name	Botanical Name	Indicator	FQA	notes
box-elder	<i>Acer negundo</i>	FACW-	1	
red maple	<i>Acer rubrum</i>	FAC	5	dominant
false-nettle	<i>Boehmeria cylindrica</i>	OBL	3	
trumpet creeper	<i>Campsis radican</i>	FAC	1	
swamp oval sedge	<i>Carex muskingumensis</i>	OBL	2	
straight-styled bracted sedge	<i>Carex radiata</i>	UPL	7	upland
sedge	<i>Carex</i> sp.	FACW	7	
fox sedge	<i>Carex vulpinoidea</i>	OBL	7	
northern catalpa	<i>Catalpa speciosa</i>	FACU	0	upland
sugarberry	<i>Celtis laevigata</i>	FACW	7	
stout wood-reedgrass	<i>Cinna arundinacea</i>	FACW	4	
common boneset	<i>Eupatorium perfoliatum</i>	FACW+	4	
late boneset	<i>Eupatorium serotinum</i>	FAC+	0	
green ash	<i>Fraxinus pennsylvanica</i>	FACW	1	
white avens	<i>Geum canadense</i>	FAC	1	
fowl manna grass	<i>Glyceria striata</i>	OBL	4	
whitegrass	<i>Leersia virginica</i>	OBL	4	dominant
red mulberry	<i>Morus rubra</i>	FAC-	4	upland
smartweed (formerly polygonom punctatum)	<i>Persicaria punctata</i>	OBL	3	
cleareweed	<i>Pilea pumila</i>	FACW	2	
sycamore	<i>Platanus occidentalis</i>	FACW	3	
quercus (black jack oak)	<i>Quercus marilandica</i>	UPL	7	upland
green bulrush	<i>Scirpus atrovirens</i>	OBL	4	
american elm	<i>Ulmus americana</i>	FACW-	3	dominant
poison ivy	<i>Toxicodendron radicans</i>	FAC+	1	dominant
total hydrophytic taxa observed			20	
average of FQA (dominant wetland species only)			3.25	
number of indicator taxa			3	

# I-69 Wetland Quality Assessment Profile

Date Report Generated: 2/17/2006  
Wetland site: Section 1  
Data reference # W05 Wetland Impact #2  
Date of site visit: 08/30/05  
Total wetland area: 0.01 acres

<b>Polygon Information</b>	
Polygon ID	0
Polygon Size (acres)	0.010
Wetland Community Type	WM
<b>Red Flag (Special) Indicators</b>	
Special Hydrologic Conditions	N
Special Community Type	N
Rare-Threatened-Endangered Species	N
<b>Animal Habitat Measures</b>	
Wetland size and connectivity	2
Surrounding land use	3
Standing water	1
Dead woody material	1
Zonation and interspersion	1
Stratification	1
Tree canopy	1
Mature trees	1
<b>Animal Habitat Measure Score (min = 8, max = 24,</b>	<b>11</b>
<b>Animal Habitat Measure Rating</b>	<b>poor</b>
<b>Botanical Measures (all except exotics dependent upon community type)</b>	
Number of dominant plant taxa observed	2
Conservatism rating	1
Total hydrophytic taxa observed	1
Number of indicator taxa	1
Exotic species rating	3
<b>Botanical Measure Score (min = 5, max = 15),</b>	<b>8</b>
<b>Botanical Measure Rating</b>	<b>poor</b>
<b>Hydrology Measures</b>	
Water quality protection (= no. of yes answers)	3
Flood and storm water storage (= no. of yes answers)	2
<b>Site/Hydrology Score (min = 11, max = 33)</b>	<b>21</b>
<b>Site/Hydrology Rating</b>	<b>fair</b>



## In-WRAP Summary Sheet

Date Report Generated: 8-30-05  
Wetland site name: Sec 1 - W05  
Data Reference #: \_\_\_\_\_  
Date of Site Visit: 8-30-05  
NWI polygons in Site (quadrangle and NWI id. numbers): \_\_\_\_\_

### TIER 1 SUMMARY:

- a. Total wetland area (hectares): 0.01 acres
- b. Wetland size and connectivity - contribution to animal habitat:  
Valuable More Favorable Favorable Neutral
- c. Surrounding land use - numerical rank (max = 1): 0.75
- d. Value surrounding area adds to animal habitat: Valuable Favorable Low

### TIER 2 SUMMARY

NWI Polygon Id. \_\_\_\_\_

- a. Indiana Wetland community type: wet meadow
- b. Standing water - contribution to animal habitat: Valuable Favorable Neutral
- c. Disturbances to site: road
- d. Exotic species rating: Good Medium Poor
- e. Special Hydrologic Conditions Observed: none
- f. Special Community Type: none
- g. Rare-Threatened-Endangered Species: none
- h. Polygon Quality Descriptor: Good Medium Poor

### TIER 3A SUMMARY

- a. Dead woody material as indicator of animal habitat: Valuable Favorable Neutral
- b. Water quality protection - numerical rank (0 max.): 3 Rating: Good Medium Poor
- c. Flood and storm water storage - numerical rank (5 max.): 2 Rating: Good Medium Poor

### TIER 3B SUMMARY

- a. Zonation and interspersed as indicator of animal habitat: Valuable Favorable Neutral
- b. Stratification as indicator of animal habitat: Valuable Neutral
- c. Number of dominant plant taxa observed: 5 Rating: Good Medium Poor
- d. Average coefficient of conservatism: 1.6 Rating: Good Medium Poor
- e. Tree canopy as indicator of animal habitat: Valuable Neutral
- f. Mature trees as indicator of animal habitat: Valuable Favorable Neutral
- g. Total hydrophytic taxa observed: 7 Rating: Good Medium Poor
- h. Number of Indicator taxa: 0 Rating: Good Medium Poor

## Indiana Wetland Routine Assessment Protocol

Data Reference # 03-07-30  
TERG May 2000

## Tier 1: Assessment Overview

## 1.1 Site Identification:

Wetland site name: Sect- w05Ownership (if known): n/a\* USGS Topographic Quadrangle(s): Elberfeld\* USGS Watershed map 14-Digit HUC: 051402020050

Identify each NWI Polygon within the Wetland Site (Polygon specific data)

* NWI Polygon ID Number	<u>—</u>				
Cowardin Classification	<u>PEM1B-n</u>				
Polygon Size (hectares)	<u>0.0040469</u>				

NWI Polygon ID Number					
Cowardin Classification					
Polygon Size (hectares)					

## 1.2 Site Visit:

Team members: Erica Christensen, Marc WoernleFirm Agency: JF NewDate assessed: 8-30-05 Time assessed: \_\_\_\_\_Weather conditions: hot, humid, mid 90's, sunny

Note any unusual weather events that may have influenced the current conditions within this wetland system (e.g. recent heavy rains, an unusually dry season, an especially early spring, etc.):

none

## 1.3 Wetland Size:

Size of site under assessment: 0.0040469 hectares = 0.01 acres

Size of total wetland complex (all continuous wetland polygons): \_\_\_\_\_

## 1.4 Site Setting:

Degree of isolation from other wetlands or wetland complexes:

- ☐ The site is connected upstream and downstream with other wetlands  
☐ The site is only connected upstream with other wetlands  
☐ The site is only connected downstream with other wetlands  
☐ Other wetlands are nearby (within 0.25 mile) but not connected  
☒ The wetland site is isolated

General assessment of adjacent land use / land cover in the area within 50 meters of the perimeter of the wetland site (indicate the % abundance of each type):

- 75% Native Vegetation - woodland  
Native Vegetation - old field / scrub  
Agricultural - tilled  
Agricultural - pasture  
Recreation - green space, mowed

- 25% Road / highway / railroad bed / parking lot  
Industrial  
Residential - single family  
Commercial or multifamily residential

NWI Polygon # \_\_\_\_\_  
(see table on page one)

Data Reference # 030730 InWRAP, TERG May 2000  
1-W05

**Tier 2 Individual Polygon: Preliminary Assessment** (to be completed on-site for each NWI polygon present in the wetland)

**2.1 Wetland Geomorphic Setting and Surface Water Flow (check one):**

☒ Depressional ☐ Slope ☐ Floodplain ☐ Lacustrine  
☐ Riverine (within the river/stream banks)

**2.2 Presence of Standing Water:**

Is standing water normally present in the polygon? no

- If standing water is present, is the water greater than 2 meters in depth? \_\_\_\_\_

Is standing water normally present in an adjacent polygon? n/a

**2.3 Apparent Hydroperiod (check one):**

☐ Permanently Flooded ☐ Artificially Flooded  
☒ Seasonally Flooded  
☐ Saturated (surface water seldom present) ☐ Artificially Drained

**2.4 Soil Type:**

☐ Organic (i.e. peat, etc.) ☒ Mineral ☐ Both Mineral and Organic Present

**2.5 Wetland Community Type for this NWI polygon (see Key to Wetland Communities of Indiana):**

wet meadow

**2.6 Disturbances of Hydrology (check all that apply):**

☐ Ditching ☐ Culvert  
☐ Tiles ☐ Other Human Disturbances to the  
☐ Dams Hydrology (explain):  
☐ Road or Railroad Embankment

**2.7 Presence of Invasive Exotics (Score as: S = Scattered, F = Frequent, or C = Common):**

☐ Garlic Mustard ☐ Glossy Buckthorn  
☐ Phragmites ☐ Reed canary grass  
☐ Purple Loosestrife ☒ Other (list): Setaria faberii

**2.8 Presence of Special Hydrologic Conditions (i.e. seeps, wet slopes, floating mat):**

n/a

**2.9 Presence of Special Community Types:** n/a

☐ Bog ☐ Fen ☐ Wet Sand / Muck Flats or Marl Seeps

**2.10 Presence of Known Federal or Indiana Rare, Threatened or Endangered Species:** n/a

☐ None observed or known to be present  
☐ RTES Present (list): \_\_\_\_\_

**2.11 Wetland Polygon Quality Descriptor (see: Wetland Quality Descriptions and check one):**

☐ Good ☒ Medium ☐ Poor



NWI Polygon # \_\_\_\_\_

Data Reference # 030730 InWRAP, TERG May 2000

**Tier 3a Individual Polygon: Rapid Hydrology Indicators** 1-W05

**3a.1 Notable Features that influence water quality and hydrology:**

Estimated herbaceous plant cover (percentage) in the polygon ☒ 100-75 ☐ 75-50 ☐ 50-25 ☐ <25

Estimated woody plant foliar coverage in the polygon ☐ 100-75 ☐ 75-50 ☒ 50-25 ☐ <25

Amount of dead woody material on the soil surface: ☒ nil ☐ scattered ☐ frequent

**3a.2 Water Quality Protection Questions:**

1. ☒ Y ☐ N Does the wetland have a significant amount of vegetative (specifically herbaceous and woody plant) density to potentially uptake dissolved nutrients?
2. ☒ Y ☐ N Managed water (e.g. municipal or road stormwater drainage, agricultural drainage outlet, industrial or municipal wastewater) is not discharged into the wetland polygon?
3. If wetland in question is a depressional wetland answer 3a, if not, answer 3b  
3a. ☒ Y ☐ N Does the wetland have a shape or flow that allows for the settling out of suspended materials before the water reaches the center of the wetland?  
3b. ☐ Y ☐ N Is the position of the wetland in the landscape such that run-off is held or filtered before entering a surface body of water down gradient?
4. ☒ Y ☐ N Does the wetland lack steep slopes, large impervious areas, moderate slopes with row cropping, or areas with severe overgrazing within 100 meters of its border?
5. ☒ Y ☐ N Are there recreational lakes, fishable or navigable watercourses, or water supply sources down gradient in the local watershed?
6. ☒ Y ☐ N Is a vegetative buffer area or another wetland polygon (areas where overland flow could be filtered) located upland and adjacent to the wetland polygon? If yes, describe buffer area width and slope.  
width of buffer area (in meters) \_\_\_\_\_ approximate slope (percent) \_\_\_\_\_

**3a.3 Flood and Stormwater Storage / Attenuation Questions:**

1. If wetland in question is a depressional wetland answer 1a, if not, answer 1b  
1a. ☒ Y ☐ N Around the wetland is there a buffer strip of natural vegetation (forested, old field, scrub) that will slow overland flow into the wetland?  
1b. ☐ Y ☐ N Is there a significant amount of microtopography or vegetative density within the wetland to reduce the velocity of the water leaving the wetland?
2. ☒ Y ☐ N Does the wetland lack man-made structures that would speed the flow of water from the wetland (tiles, culverts, ditches)?
3. ☒ Y ☐ N Is the flood potential high in the local watershed in which the wetland is located (history of flood damages)?
4. ☒ Y ☐ N Is the wetland located in a watershed where the majority of the upland soils are clayey and impermeable, or is bedrock within two feet of the top of the soil profile?
5. ☒ Y ☐ N Is the wetland located in a local watershed which has highly modified runoff conditions due to existing development?

NWI Polygon # \_\_\_\_\_

Data Reference # 030730 InWRAP, TERG May 2000  
1. 005

### Tier 3b Individual Polygon: Rapid Vegetation Description

#### 3b.1 Zonation and Interspersion:

1. How many vegetation zones are evident in this wetland polygon? 1

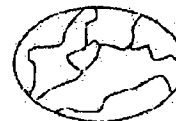
1b. If only one vegetation zone is evident, which best describes the site?

- ☐ Polygon composed of a mosaic of small vegetation patches, hummocks, or tussocks; heterogeneous textures across the polygon.
- ☒ Polygon composed of a single vegetation type with more or less uniform texture across the polygon.

2. If more than one vegetation zone is present in the polygon, which interspersion diagram most closely represents the distribution of these zones?

Type One Interspersion

Type Two Interspersion



#### 3b.2 Dominant Plant Species: Vegetation zone A

Observation Point #1  
Roll / photo number(s) \_\_\_\_\_  
(Note: V-mark location on the NWI polygon)

What % of the polygon does this vegetative zone occupy?

10 - 25%      25 - 50%      50 - 75%      75 - 90%      ☒ >90%

Is there notable layering/stratification in this vegetation zone? no

Dominant Herbaceous Species (i.e. covering more than 10 % of the area) listed in order of relative abundance. (Mark with an \* any species that forms extensive monocultural patches).

- |                                      |                          |
|--------------------------------------|--------------------------|
| a <u>Slender rush</u>                | e <u>blunt spikerush</u> |
| b <u>yellow-seed false pimpernel</u> | f _____                  |
| c <u>annual ragweed</u>              | g _____                  |
| d <u>Pennsylvania smartweed</u>      | h _____                  |

Dominant Shrub Species listed in order of relative abundance.

- |         |         |
|---------|---------|
| a _____ | c _____ |
| b _____ | d _____ |

Dominant Tree Species. Indicate size categories of each tree species: P=pole (3-12" dbh), M=mature (>12")

- |         |   |   |         |   |   |
|---------|---|---|---------|---|---|
| a _____ | P | M | c _____ | P | M |
| b _____ | P | M | d _____ | P | M |

Tree and shrub canopy:

☒ nil      separate, seldom touching      often touching      more or less closed

NWI Polygon # \_\_\_\_\_ Data Reference # \_\_\_\_\_ InWRAP, TERG May 2000

Dominant Shrub Species listed in order of relative abundance.

a \_\_\_\_\_ c \_\_\_\_\_  
b \_\_\_\_\_ d \_\_\_\_\_

Dominant Tree Species. Indicate size categories of each tree species: P=pole (3-12"dbh), M=mature (>12")

a \_\_\_\_\_ P M c \_\_\_\_\_ P M  
b \_\_\_\_\_ P M d \_\_\_\_\_ P M

Tree and shrub canopy:

nil separate, seldom touching often touching more or less closed

3b.2 Dominant Plant Species: Vegetation zone D

Observation Point #4

Roll / photo number(s) \_\_\_\_\_  
(Note: V-mark location on the NWI polygon)

What % of the polygon does this vegetative zone occupy?

10 - 25% 25 - 50% 50 - 75% 75 - 90% >90%

Is there notable layering/stratification in this vegetation zone? \_\_\_\_\_

Dominant Herbaceous Species (i.e. covering more than 10 % of the area) listed in order of relative abundance.  
(Mark with an \* any species that forms extensive monocultural patches).

a \_\_\_\_\_ e \_\_\_\_\_  
b \_\_\_\_\_ f \_\_\_\_\_  
c \_\_\_\_\_ g \_\_\_\_\_  
d \_\_\_\_\_ h \_\_\_\_\_

Dominant Shrub Species listed in order of relative abundance.

a \_\_\_\_\_ c \_\_\_\_\_  
b \_\_\_\_\_ d \_\_\_\_\_

Dominant Tree Species. Indicate size categories of each tree species: P=pole (3-12"dbh), M=mature (>12")

a \_\_\_\_\_ P M c \_\_\_\_\_ P M  
b \_\_\_\_\_ P M d \_\_\_\_\_ P M

Tree and shrub canopy:

nil separate, seldom touching often touching more or less closed

3b.3 Other remarks (include personal comments about what adds to or detracts from the quality of this wetland site).

Early Succession.



<b>Sec1-w05</b>				
<b>Common Name</b>	<b>Botanical Name</b>	<b>Indicator</b>	<b>FQA</b>	<b>notes</b>
slender rush	<i>Juncus tenuis</i>	FAC	0	dominant
giant ragweed	<i>Ambrosia trifida</i>	FAC+	0	dominant
yellow-seed false pimpernel	<i>Lindernia dubia</i>	OBL	3	dominant
Pennsylvania smartweed	<i>Polygonum pennsylvanicum</i>	FACW+	4	dominant
blunt spikerush	<i>Eleocharis obtusa</i>	OBL	1	dominant
sedge	<i>Carex</i> sp.	FACW	2	
whitegrass	<i>Leersia virginica</i>	FACW	4	
Japanese bristle grass	<i>Setaria faberi</i>	FACU+	*	exotic
total hydrophytic taxa observed			7	
average of FQA (dominant wetland species only)			1.6	
number of indicator taxa			0	

# I-69 Wetland Quality Assessment Profile

Date Report Generated: 2/17/2006  
Wetland site: Section 1  
Data reference # W07 Wetland Impact #3  
Date of site visit: 08/25/05  
Total wetland area: 0.231 acres

<b>Polygon Information</b>	
Polygon ID	0
Polygon Size (acres)	0.231
Wetland Community Type	SFB
<b>Red Flag (Special) Indicators</b>	
Special Hydrologic Conditions	N
Special Community Type	N
Rare-Threatened-Endangered Species	N
<b>Animal Habitat Measures</b>	
Wetland size and connectivity	2
Surrounding land use	2
Standing water	1
Dead woody material	1
Zonation and interspersion	3
Stratification	1
Tree canopy	1
Mature trees	1
<b>Animal Habitat Measure Score (min = 8, max = 24,</b>	<b>12</b>
<b>Animal Habitat Measure Rating</b>	<b>poor</b>
<b>Botanical Measures (all except exotics dependent upon community type)</b>	
Number of dominant plant taxa observed	1
Conservatism rating	1
Total hydrophytic taxa observed	1
Number of indicator taxa	1
Exotic species rating	2
<b>Botanical Measure Score (min = 5, max = 15),</b>	<b>6</b>
<b>Botanical Measure Rating</b>	<b>poor</b>
<b>Hydrology Measures</b>	
Water quality protection (= no. of yes answers)	4
Flood and storm water storage (= no. of yes answers)	3
<b>Site/Hydrology Score (min = 11, max = 33)</b>	<b>25</b>
<b>Site/Hydrology Rating</b>	<b>fair</b>

## In-WRAP Summary Sheet

Date Report Generated: 8-30-05  
Wetland site name: Sec1-W07  
Data Reference # —  
Date of Site Visit: 8-25-05  
NWI polygons in Site (quadrangle and NWI id. numbers): —

### TIER 1 SUMMARY:

- a. Total wetland area (hectares): 0.093 hectares (0.23 acres)  
b. Wetland size and connectivity - contribution to animal habitat:  
☐ Valuable ☐ More Favorable ☒ Favorable ☐ Neutral  
c. Surrounding land use - numerical rank (max. = 1): 0.52  
d. Value surrounding area adds to animal habitat: ☐ Valuable ☒ Favorable ☐ Low

### TIER 2 SUMMARY

NWI Polygon Id. —

- a. Indiana Wetland community type: Seasonally Flooded Basin  
b. Standing water - contribution to animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
c. Disturbances to site: none  
d. Exotic species rating: ☐ Good ☒ Medium ☐ Poor  
e. Special Hydrologic Conditions Observed: none  
f. Special Community Type: none  
g. Rare-Threatened-Endangered Species: none  
h. Polygon Quality Descriptor: ☐ Good ☒ Medium ☐ Poor

### TIER 3A SUMMARY

- a. Dead woody material as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
b. Water quality protection - numerical rank (6 max.): 4 Rating: ☐ Good ☒ Medium ☐ Poor  
c. Flood and storm water storage - numerical rank (5 max.): 3 Rating: ☐ Good ☒ Medium ☐ Poor

### TIER 3B SUMMARY

- a. Zonation and interspersation as indicator of animal habitat: ☒ Valuable ☐ Favorable ☐ Neutral  
b. Stratification as indicator of animal habitat: ☐ Valuable ☒ Neutral  
c. Number of dominant plant taxa observed: 3 Rating: ☐ Good ☐ Medium ☒ Poor  
d. Average coefficient of conservatism: 1.5 Rating: ☐ Good ☐ Medium ☒ Poor  
e. Tree canopy as indicator of animal habitat: ☐ Valuable ☒ Neutral  
f. Mature trees as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
g. Total hydrophytic taxa observed: 10 Rating: ☐ Good ☐ Medium ☒ Poor  
h. Number of indicator taxa: 6 Rating: ☐ Good ☐ Medium ☒ Poor



### 1.1 Site Identification:

Project Site Name: 1-W07

Ownership (if known): \_\_\_\_\_

USGS Topographic Quadrangle(s): Elberfeld

USGS Watershed 14-digit HUC: 15140202020650

NWI Polygon ID #	-					
Cowardin Classification	PEM-1-Bn					
Polygon Size (hectares)	0.093					

Team Members: PMC & MWW

Company/Agency: SF New

Date Assessed: 8-25-05 Time: 1015AM Weather Conditions: Sunny, 80's

Note any unusual weather events that may have influenced the current conditions within this wetland system (e.g. recent heavy rains, an unusually dry season, an especially early spring, etc.):

Size of site being assessed: 0.093 hectares = 0.23 acres

Size of total wetland complex (all contiguous wetland polygons):                     

**Degree of isolation from other wetland complexes:**

- ☐ Site is connected upstream and downstream with other wetlands  
☐ Site is connected upstream with other channels  
☐ Site is connected downstream with other wetlands  
☒ Other wetlands are within 0.25 mile but not connected  
☐ Site is isolated

General assessment of adjacent land use/land cover within 50 meters of the perimeter of the wetland site (indicate % abundance of each type):

$$0.4 + 0.12 = 0.52$$

- ☒ Native Vegetation- woodland
- ☐ Native Vegetation- old field/scrub
- ☒ Agriculture - tilled
- ☐ Agriculture- pasture
- ☐ Recreation- green space, mowed
- ☐ Road/Highway/Railroad Bed/Parking Lot
- ☐ Industrial
- ☐ Residential- single family
- ☐ Commercial or Multifamily Residential

Abundance: 40

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**Tier 2 Individual Polygon: Preliminary Assessment** (for each wetland polygon present on-site)

**2.1 Wetland Geomorphic Setting and Surface Water Flow:**

- |   |                                     |
|---|-------------------------------------|
| <input checked="" type="checkbox"/> Depressional                  | <input type="checkbox"/> Floodplain |
| <input type="checkbox"/> Riverine (within the river/stream banks) | <input type="checkbox"/> Lacustrine |
| <input type="checkbox"/> Slope                                    |                                     |

**2.2 Presence of Standing Water:**

Is standing water normally present in the polygon? ☐ Yes ☒ No

If yes, is the water greater than 2 meters in depth? ☐ Yes ☐ No

Is standing water normally present in an adjacent polygon? ☐ Yes ☐ No

**2.3 Apparent Hydroperiod:**

- |  |   |
|--|---|
| <input type="checkbox"/> Permanently Flooded                                 | <input type="checkbox"/> Artificially Flooded |
| <input type="checkbox"/> Seasonally Flooded                                  | <input type="checkbox"/> Artificially Drained |
| <input checked="" type="checkbox"/> Saturated (surface water seldom present) |   |

**2.4 Soil Type:**

- ☐ Organic (ie. Peat, etc.)  
☒ Mineral  
☐ Both Mineral and Organic Present

**2.5 Wetland Community Type for this polygon (See Key to Wetland Communities of Indiana):**

Seasonally-Flooded basin

**2.6 Disturbances of Hydrology: None**

- |                                   |  |
|-----------------------------------|--|
| <input type="checkbox"/> Ditching | <input type="checkbox"/> Road or Railroad Embankment               |
| <input type="checkbox"/> Tiles    | <input type="checkbox"/> Culvert                                   |
| <input type="checkbox"/> Dams     | <input type="checkbox"/> Other Human Disturbances to the Hydrology |
- Describe: \_\_\_\_\_

**2.7 Presence of Invasive Exotic Vegetation: ~~XXXX~~**

- |   |  |
|---|--|
| <input type="checkbox"/> Garlic Mustard     | <input type="checkbox"/> Glossy Buckthorn  |
| <input type="checkbox"/> <i>Phragmites</i>  | <input type="checkbox"/> Reed Canary Grass |
| <input type="checkbox"/> Purple Loosestrife | <input checked="" type="checkbox"/> Other  |

List: burdock, birdweed, Setaria faberii  
(Scattered)

**2.8 Presence of Special Hydrologic Conditions (ie. seeps, wet slopes, floating mats):**

n/a

**2.9 Presence of Special Community Types: None**

- ☐ Bog ☐ Fen ☐ Wet Sand/ Muck Flats or Marl Seeps ☐ Sinkhole pond or swamp

**2.10 Presence of Known Federal or Indiana Rare, Threatened, or Endangered Species (RTES):**

- ☒ None Observed or Known To Be Present  
☐ RTES Present (list): \_\_\_\_\_

**2.11 Wetland Polygon Quality Descriptor (see Wetland Quality Descriptions, and check one below):**

- ☐ Good ☒ Medium ☐ Poor

NWI Polygon ID #: \_\_\_\_\_

Project #: 030730/00  
1-W07

### Tier 3a Individual Polygon: Rapid Hydrology Indicators

#### 3a.1 Notable Features That Influence Water Quality and Hydrology:

Estimate Herbaceous Plant Cover (%) in the Polygon: ☒ 100-75 ☐ 75-50 ☐ 50-25 ☐ <25

Estimated Woody Plant Foliar Coverage in the Polygon ☐ 100-75 ☐ 75-50 ☐ 50-25 ☒ <25

Amount of Dead Woody Material on the Soil Surface:

☒ Nil (<5% cover) ☐ Scattered (5-15% cover) ☐ Frequent (>20% cover)

#### 3a.2 Water Quality Protection Questions:

1. ☒ Yes ☐ No The wetland has a significant amount of vegetative (specifically herbaceous and wood plants) density to potentially uptake dissolved nutrients.
2. ☒ Yes ☐ No Managed Water (eg. Municipal or storm water drainage, agricultural drainage outlet, industrial or municipal wastewater) is **not** discharged into the wetland polygon.

If the wetland in question is a depressional wetland, respond to questions 3a. If not, answer 3b.

- 3a. ☐ Yes ☒ No The wetland has a shape or flow that allows for the settling out of suspended materials before the water reaches the center of the wetland.
- 3b. ☐ Yes ☐ No The position of the wetland in the landscape is such that run-off is held or filtered before entering a surface body of water down-gradient.
4. ☒ Yes ☐ No Within 100 meters of its borders, the wetland **lacks** steep slopes, large impervious areas, moderate slopes with row cropping, or areas of severe overgrazing.
5. ☐ Yes ☒ No There are recreational lakes, fishable or navigable watercourses, or water supply sources down-gradient in the local watershed.
6. ☒ Yes ☐ No There is a vegetative buffer area (>15 meters wide), or another wetland polygon (areas where overland flow can be filtered) located upland and adjacent to the wetland polygon. If yes, describe the buffer area width and slope:

Ave. buffer width (meters): >100 m Approx. slope (%): 10%

#### 3a.2 Water Quality Protection Questions:

If the wetland in question is a depressional wetland, answer 1a. If not, answer 1b.

- 1a. ☐ Yes ☒ No The wetland is surrounded by a buffer of natural vegetation (forested, old field, scrub) that will slow overland flow into the wetland.
- 1b. ☐ Yes ☐ No There is a significant of microtopography or vegetative density within the wetland to reduce the velocity of water leaving the wetland.
2. ☒ Yes ☐ No The wetland **lacks** man-made structures that would speed the flow of water from the wetland (eg. tiles, culverts, ditches).
3. ☒ Yes ☐ No The flood potential of the local watershed in which the wetland is located is high (history of flood damages).
4. ☐ Yes ☒ No The wetland is located in a watershed in which the majority of the upland soils are clayey and impermeable, or bedrock is within two feet of the top of the soil profile.
5. ☒ Yes ☐ No The wetland is located in a watershed in which there are highly modified conditions due to existing development. (e.g. >5% of area is row crop, commercial, or residential use)



NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

### Tier 3b Individual Polygon: Rapid Vegetation Description

#### 3b.1 Zoning and Interspersion:

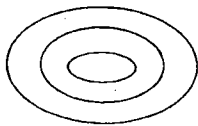
1. How many vegetation zones are evident in this wetland polygon? 1

1b. If only one vegetation zone is evident, which best describes the site?

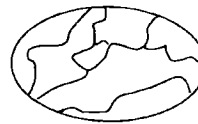
- ☒ Polygon composed of a mosaic of small vegetation patches, hummocks, or tussocks; heterogeneous textures across the polygon
- ☐ Polygon composed of a single vegetation type with more or less uniform texture across the polygon

2. If more than one vegetation zone is present in the polygon, which interspersion diagram most closely represents the distribution of these zones?

☐ Type One Interspersion



☐ Type Two Interspersion



#### 3b.2 Dominant Plant Species: Vegetation Zone A

##### Observation Point #1

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☒ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☒ >90%

Is there notable layering/stratification in this vegetation zone?

- ☐ Yes    ☒ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a Sorghum halapense  
b ambrosia tripartita  
c polypodium  
d IP

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a n/a  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a n/a  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Tree and Shrub Canopy:

- ☒ nil    ☐ separate, seldom touching    ☐ often touching    ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes    ☒ No

Other remarks (include personal comments about what adds to or detracts from the quality of this wetland site)

disturbed ag. area  
provides sediment trapping & pollution filtration  
prior to water entering woodland & stream

NWI Polygon ID #: \_\_\_\_\_

Project #: 030730/00  
1-W01

**3b.2 Dominant Plant Species: Vegetation Zone B**

**Observation Point #1**

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☐ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

- ☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a \_\_\_\_\_  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Tree and Shrub Canopy:

- ☐ nil    ☐ separate, seldom touching    ☒ often touching    ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes    ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

**3b.2 Dominant Plant Species: Vegetation Zone C**

**Observation Point #1**

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☐ 10-25%    ☒ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

- ☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a \_\_\_\_\_  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**3b.2 Dominant Plant Species: Vegetation Zone C (cont'd)**

Tree and Shrub Canopy:

☐ nil                      ☐ separate, seldom touching                      ☐ often touching                      ☐ more or less closed

Mature trees (>12" dbh) present:    ☐ Yes    ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

---

**3b.2 Dominant Plant Species: Vegetation Zone D**

**Observation Point #1**

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?    ☐ Yes    ☐ No

**Dominant Herbaceous Species** (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a _____	e _____
b _____	f _____
c _____	g _____
d _____	h _____

**Dominant Shrub Species** listed in order of relative abundance:

a _____	c _____
b _____	d _____

**Dominant Tree Species** listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a _____	c _____
b _____	d _____

Tree and Shrub Canopy:

☐ nil                      ☐ separate, seldom touching                      ☐ often touching                      ☐ more or less closed

Mature trees (>12" dbh) present:    ☐ Yes    ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

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<b>Sec1-w07</b>				
<b>Common Name</b>	<b>Botanical Name</b>	<b>Indicator</b>	<b>FQA</b>	<b>notes</b>
giant ragweed	<i>Ambrosia trifida</i>	FAC+	0	dominant
common burdock	<i>Arctium minus</i>	UPL	0	exotic/upland
false-nettle	<i>Boehmeria cylindrica</i>	OBL	3	
trumpet creeper	<i>Campsis radican</i>	FAC	1	
stout wood-reedgrass	<i>Cinna arundinacea</i>	FACW	4	
climbing day flower	<i>Commelina diffusa</i>	FACW	0	
field bindweed	<i>Convolvulus arvensis</i>	UPL	0	exotic/upland
barnyard grass	<i>Echinochloa crusgalli</i>	FACW	0	exotic
yerba de tajo	<i>Eclipta prostrata</i>	FACW	3	
fall panic grass	<i>Panicum dichotomiflorum</i>	FACW-	0	
smooth lens grass	<i>Paspalum laeve</i>	FACW-	2	
smartweed (formerly polygonum punctatum)	<i>Persicaria punctata</i>	OBL	3	dominant
allegheny blackberry	<i>Rubus allegheniensis</i>	FACU+	2	upland
japanese bristle grass	<i>Setaria faberi</i>	FACU+	0	exotic/upland
johnson grass	<i>Sorghum halepense</i>	FACU	0	dominant/ upland
total hydrophytic taxa observed			10	
average of FQA (dominant wetland species only)			1.5	
number of indicator taxa			0	

# I-69 Wetland Quality Assessment Profile

Date Report Generated: 12/1/2005  
Wetland site: Section 1  
Data reference # W08 Wetland Impact #4  
Date of site visit: 08/25/05  
Total wetland area: 0.336 acres

<b>Polygon Information</b>	
Polygon ID	0
Polygon Size (acres)	0.34
Wetland Community Type	WM
<b>Red Flag (Special) Indicators</b>	
Special Hydrologic Conditions	N
Special Community Type	N
Rare-Threatened-Endangered Species	N
<b>Animal Habitat Measures</b>	
Wetland size and connectivity	2
Surrounding land use	1
Standing water	1
Dead woody material	1
Zonation and intersperson	3
Stratification	1
Tree canopy	1
Mature trees	1
<b>Animal Habitat Measure Score (min = 8, max = 24,</b>	<b>11</b>
<b>Animal Habitat Measure Rating</b>	<b>poor</b>
<b>Botanical Measures (all except exotics dependent upon community type)</b>	
Number of dominant plant taxa observed	1
Conservatism rating	1
Total hydrophytic taxa observed	3
Number of indicator taxa	1
Exotic species rating	2
<b>Botanical Measure Score (min = 5, max = 15)</b>	<b>8</b>
<b>Botanical Measure Rating</b>	<b>poor</b>
<b>Hydrology Measures</b>	
Water quality protection (= no. of yes answers)	4
Flood and storm water storage (= no. of yes answers)	1
<b>Site/Hydrology Score (min = 11, max = 33)</b>	<b>21</b>
<b>Site/Hydrology Rating</b>	<b>fair</b>

## In-WRAP Summary Sheet

Date Report Generated: 8-30-05  
Wetland site name: Sec 1-W08  
Data Reference # —  
Date of Site Visit: 8-25-06  
NWI polygons in Site (quadrangle and NWI id. numbers): —

### TIER 1 SUMMARY:

- a. Total wetland area (hectares): 0.1335 hectares (0.33 acres)  
b. Wetland size and connectivity - contribution to animal habitat:  
☐ Valuable ☐ More Favorable ☒ Favorable ☐ Neutral  
c. Surrounding land use - numerical rank (max. = 1): 0.26  
d. Value surrounding area adds to animal habitat: ☐ Valuable ☐ Favorable ☒ Low

### TIER 2 SUMMARY

NWI Polygon Id. —

- a. Indiana Wetland community type: wet meadow  
b. Standing water - contribution to animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
c. Disturbances to site: ditching, road  
d. Exotic species rating: ☐ Good ☒ Medium ☐ Poor  
e. Special Hydrologic Conditions Observed: none  
f. Special Community Type: none  
g. Rare-Threatened-Endangered Species: none  
h. Polygon Quality Descriptor: ☐ Good ☒ Medium ☐ Poor

### TIER 3A SUMMARY

- a. Dead woody material as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
b. Water quality protection - numerical rank (6 max.): 1 Rating: ☐ Good ☒ Medium ☐ Poor  
c. Flood and storm water storage - numerical rank (5 max.): 1 Rating: ☐ Good ☐ Medium ☒ Poor

### TIER 3B SUMMARY

- a. Zonation and interspersation as indicator of animal habitat: ☒ Valuable ☐ Favorable ☐ Neutral  
b. Stratification as indicator of animal habitat: ☐ Valuable ☒ Neutral  
c. Number of dominant plant taxa observed: 3 Rating: ☐ Good ☐ Medium ☒ Poor  
d. Average coefficient of conservatism: 1.33 Rating: ☐ Good ☐ Medium ☒ Poor  
e. Tree canopy as indicator of animal habitat: ☐ Valuable ☒ Neutral  
f. Mature trees as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
g. Total hydrophytic taxa observed: 22 Rating: ☒ Good ☐ Medium ☐ Poor  
h. Number of indicator taxa: 0 Rating: ☐ Good ☐ Medium ☒ Poor



**Tier 1: Assessment Overview****1.1 Site Identification:**Project Site Name: 1-W08Ownership (if known):                     USGS Topographic Quadrangle(s): ElberfeldUSGS Watershed 14-digit HUC: 05140202020050

Identify each National Wetland Inventory (NWI) Polygon within the project site (Polygon-specific data)

NWI Polygon ID #	<u>                    </u>						
Cowardin Classification	<u>DEM-1Bm</u>						
Polygon Size (hectares)	<u>0.1335</u>						

**1.2 Site Visit:**Team Members: EMC & MWWCompany/Agency: JENEXDate Assessed: 8-25-05 Time: 930 AM Weather Conditions: SUNNY, 70'S

Note any unusual weather events that may have influenced the current conditions within this wetland system (e.g. recent heavy rains, an unusually dry season, an especially early spring, etc.):

\_\_\_\_\_

**1.3 Wetland Size:**Size of site being assessed: 0.1335 hectares = 0.33 acresSize of total wetland complex (all contiguous wetland polygons):                     **1.4 Site Setting:**

Degree of isolation from other wetland complexes:

- ☐ Site is connected upstream and downstream with other wetlands  
☐ Site is connected upstream with other channels  
☐ Site is connected downstream with other wetlands  
☒ Other wetlands are within 0.25 mile but not connected  
☐ Site is isolated

General assessment of adjacent land use/land cover within 50 meters of the perimeter of the wetland site (indicate % abundance of each type):

- |   |                             |
|---|-----------------------------|
| <input checked="" type="checkbox"/> Native Vegetation- woodland           | Abundance: <u>10</u>        |
| <input type="checkbox"/> Native Vegetation- old field/scrub               | <u>                    </u> |
| <input checked="" type="checkbox"/> Agriculture - tilled                  | <u>20</u>                   |
| <input type="checkbox"/> Agriculture- pasture                             | <u>                    </u> |
| <input type="checkbox"/> Recreation- green space, mowed                   | <u>                    </u> |
| <input checked="" type="checkbox"/> Road/Highway/Railroad Bed/Parking Lot | <u>40</u>                   |
| <input type="checkbox"/> Industrial                                       | <u>                    </u> |
| <input checked="" type="checkbox"/> Residential- single family            | <u>30</u>                   |
| <input type="checkbox"/> Commercial or Multifamily Residential            | <u>                    </u> |

$$0.1 + 0.104 + 0.12 = 0.224$$

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**Tier 2 Individual Polygon: Preliminary Assessment** (for each wetland polygon present on-site)

**2.1 Wetland Geomorphic Setting and Surface Water Flow:**

- |   |  |
|---|--|
| <input type="checkbox"/> Depressional                             | <input checked="" type="checkbox"/> Floodplain |
| <input type="checkbox"/> Riverine (within the river/stream banks) | <input type="checkbox"/> Lacustrine            |
| <input type="checkbox"/> Slope                                    |  |

**2.2 Presence of Standing Water:**

Is standing water normally present in the polygon? ☐ Yes ☒ No

If yes, is the water greater than 2 meters in depth? ☐ Yes ☐ No

Is standing water normally present in an adjacent polygon? ☐ Yes ☐ No

**2.3 Apparent Hydroperiod:**

- |  |   |
|--|---|
| <input type="checkbox"/> Permanently Flooded                                 | <input type="checkbox"/> Artificially Flooded |
| <input type="checkbox"/> Seasonally Flooded                                  | <input type="checkbox"/> Artificially Drained |
| <input checked="" type="checkbox"/> Saturated (surface water seldom present) |   |

**2.4 Soil Type:**

- ☐ Organic (ie. Peat, etc.)  
☒ Mineral  
☐ Both Mineral and Organic Present

**2.5 Wetland Community Type for this polygon (See Key to Wetland Communities of Indiana):**

Wet meadow

**2.6 Disturbances of Hydrology: None**

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Ditching | <input checked="" type="checkbox"/> Road or Railroad Embankment               |
| <input type="checkbox"/> Tiles               | <input type="checkbox"/> Culvert  |
| <input type="checkbox"/> Dams                | <input checked="" type="checkbox"/> Other Human Disturbances to the Hydrology |
- Describe: none = turf grass

**2.7 Presence of Invasive Exotic Vegetation:**

- |   |   |
|---|---|
| <input type="checkbox"/> Garlic Mustard     | <input type="checkbox"/> Glossy Buckthorn                 |
| <input type="checkbox"/> Phragmites         | <input type="checkbox"/> Reed Canary Grass                |
| <input type="checkbox"/> Purple Loosestrife | <input checked="" type="checkbox"/> Other (all scattered) |

List: burdock, poison hemlock, bindweed, St John's wort, setaria faberii, barnyard grass, agrostis alba

**2.8 Presence of Special Hydrologic Conditions (ie. seeps, wet slopes, floating mats):**

n/a

**2.9 Presence of Special Community Types: (None)**

- ☐ Bog ☐ Fen ☐ Wet Sand/ Muck Flats or Marl Seeps ☐ Sinkhole pond or swamp

**2.10 Presence of Known Federal or Indiana Rare, Threatened, or Endangered Species (RTES):**

- ☒ None Observed or Known To Be Present  
☐ RTES Present (list): \_\_\_\_\_

**2.11 Wetland Polygon Quality Descriptor (see Wetland Quality Descriptions, and check one below):**

- ☐ Good ☒ Medium ☐ Poor

NWI Polygon ID #: \_\_\_\_\_

Project #: 20730 / 06  
1-W08

### Tier 3a Individual Polygon: Rapid Hydrology Indicators

#### 3a.1 Notable Features That Influence Water Quality and Hydrology:

Estimate Herbaceous Plant Cover (%) in the Polygon: ☒ 100-75 ☐ 75-50 ☐ 50-25 ☐ <25

Estimated Woody Plant Foliar Coverage in the Polygon ☐ 100-75 ☐ 75-50 ☐ 50-25 ☒ <25

Amount of Dead Woody Material on the Soil Surface:

☒ Nil (<5% cover) ☐ Scattered (5-15% cover) ☐ Frequent (>20% cover)

#### 3a.2 Water Quality Protection Questions:

1. ☒ Yes ☐ No The wetland has a significant amount of vegetative (specifically herbaceous and wood plants) density to potentially uptake dissolved nutrients.
2. ☒ Yes ☐ No Managed Water (eg. Municipal or storm water drainage, agricultural drainage outlet, industrial or municipal wastewater) is **not** discharged into the wetland polygon.

If the wetland in question is a depressional wetland, respond to questions 3a. If not, answer 3b.

- 3a. ☐ Yes ☐ No The wetland has a shape or flow that allows for the settling out of suspended materials before the water reaches the center of the wetland.
- 3b. ☒ Yes ☐ No The position of the wetland in the landscape is such that run-off is held or filtered before entering a surface body of water down-gradient.
4. ☐ Yes ☒ No Within 100 meters of its borders, the wetland **lacks** steep slopes, large impervious areas, moderate slopes with row cropping, or areas of severe overgrazing.
5. ☐ Yes ☒ No There are recreational lakes, fishable or navigable watercourses, or water supply sources down-gradient in the local watershed.
6. ☒ Yes ☐ No There is a vegetative buffer area (>15 meters wide), or another wetland polygon (areas where overland flow can be filtered) located upland and adjacent to the wetland polygon. If yes, describe the buffer area width and slope:

Ave. buffer width (meters): 15m Approx. slope (%): 0

#### 3a.2 Water Quality Protection Questions:

If the wetland in question is a depressional wetland, answer 1a. If not, answer 1b.

- 1a. ☐ Yes ☒ No The wetland is surrounded by a buffer of natural vegetation (forested, old field, scrub) that will slow overland flow into the wetland.
- 1b. ☐ Yes ☐ No There is a significant of microtopography or vegetative density within the wetland to reduce the velocity of water leaving the wetland.
2. ☐ Yes ☒ No The wetland **lacks** man-made structures that would speed the flow of water from the wetland (eg. tiles, culverts, ditches).
3. ☐ Yes ☒ No The flood potential of the local watershed in which the wetland is located is high (history of flood damages).
4. ☐ Yes ☒ No The wetland is located in a watershed in which the majority of the upland soils are clayey and impermeable, or bedrock is within two feet of the top of the soil profile.
5. ☒ Yes ☐ No The wetland is located in a watershed in which there are highly modified conditions due to existing development. (e.g. >5% of area is row crop, commercial, or residential use)



NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

### Tier 3b Individual Polygon: Rapid Vegetation Description

#### 3b.1 Zoning and Interspersion:

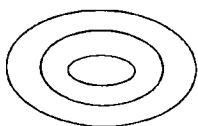
1. How many vegetation zones are evident in this wetland polygon? 1

1b. If only one vegetation zone is evident, which best describes the site?

- ☒ Polygon composed of a mosaic of small vegetation patches, hummocks, or tussocks; heterogeneous textures across the polygon
- ☐ Polygon composed of a single vegetation type with more or less uniform texture across the polygon

2. If more than one vegetation zone is present in the polygon, which interspersion diagram most closely represents the distribution of these zones?

☐ Type One Interspersion



☐ Type Two Interspersion



#### 3b.2 Dominant Plant Species: Vegetation Zone A

#### Observation Point #1

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☒ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☒ >90%

Is there notable layering/stratification in this vegetation zone?

- ☐ Yes    ☒ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a bidens \*

b symphylla alba \*

c polygamon id

d \_\_\_\_\_

e \_\_\_\_\_

f \_\_\_\_\_

g \_\_\_\_\_

h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a n/a

b \_\_\_\_\_

c \_\_\_\_\_

d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a n/a

b \_\_\_\_\_

c \_\_\_\_\_

d \_\_\_\_\_

Tree and Shrub Canopy:

☒ nil

☐ separate, seldom touching

☐ often touching

☐ more or less closed

Mature trees (>12" dbh) present:

☐ Yes

☒ No

Other remarks (include personal comments about what adds to or detracts from the quality of this wetland site)

high butterfly use & provides sediment trapping & filtration prior to discharge into nearby stream.

NWI Polygon ID #: \_\_\_\_\_

Project #: 030730/00  
1-W08

**3b.2 Dominant Plant Species: Vegetation Zone B**

**Observation Point #1**

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☐ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?    ☐ Yes    ☐ No

**Dominant Herbaceous Species** (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a	_____	e	_____
b	_____	f	_____
c	_____	g	_____
d	_____	h	_____

**Dominant Shrub Species** listed in order of relative abundance:

a	_____	c	_____
b	_____	d	_____

**Dominant Tree Species** listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a	_____	c	_____
b	_____	d	_____

**Tree and Shrub Canopy:**

- ☐ nil    ☐ separate, seldom touching    ☒ often touching    ☐ more or less closed

**Mature trees (>12" dbh) present:**    ☐ Yes    ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

**3b.2 Dominant Plant Species: Vegetation Zone C**

**Observation Point #1**

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☐ 10-25%    ☒ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?    ☐ Yes    ☐ No

**Dominant Herbaceous Species** (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a	_____	e	_____
b	_____	f	_____
c	_____	g	_____
d	_____	h	_____

**Dominant Shrub Species** listed in order of relative abundance:

a	_____	c	_____
b	_____	d	_____

**Dominant Tree Species** listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a	_____	c	_____
b	_____	d	_____

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**3b.2 Dominant Plant Species: Vegetation Zone C (cont'd)**

Tree and Shrub Canopy:

☐ nil ☐ separate, seldom touching ☐ often touching ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

---

**3b.2 Dominant Plant Species: Vegetation Zone D**

**Observation Point #1**

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25% ☐ 25-50% ☐ 50-75% ☐ 75-90% ☐ >90%

Is there notable layering/stratification in this vegetation zone? ☐ Yes ☐ No

**Dominant Herbaceous Species** (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a \_\_\_\_\_  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

**Dominant Shrub Species** listed in order of relative abundance:

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

**Dominant Tree Species** listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Tree and Shrub Canopy:

☐ nil ☐ separate, seldom touching ☐ often touching ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

---



<b>Sec1-w08</b>				
<b>Common Name</b>	<b>Botanical Name</b>	<b>Indicator</b>	<b>FQA</b>	<b>notes</b>
three-seeded mercury	<i>Acalypha virginica</i>	FACU	0	upland
redtop	<i>Agrostis alba</i>	FACW	0	dominant/ exotic
red top	<i>Agrostis gigantea</i>	NI	0	
broom-sedge	<i>Andropogon virginicus</i> var. <i>virginicus</i>	FAC-	1	upland
common burdock	<i>Arctium minus</i>	UPL	0	exotic/upland
swamp milkweed	<i>Asclepias incarnata</i>	OBL	4	
common beggar's-ticks	<i>Bidens frondosa</i>	FACW	1	dominant
false-nettle	<i>Boehmeria cylindrica</i>	OBL	3	
fescue oval sedge	<i>Carex festucacea</i>	FAC	2	
hackberry	<i>Celtis occidentalis</i>	FAC-	3	upland
poison hemlock	<i>Conium maculatum</i>	FACW	0	exotic
field bindweed	<i>Convolvulus arvensis</i>	UPL	0	exotic/upland
chufa	<i>Cyperus esculentus</i>	FACW	0	
barnyard grass	<i>Echinochloa crusgalli</i>	FACW	0	exotic
mistflower	<i>Eupatorium coelestinum</i>	UPL	2	upland
late boneset	<i>Eupatorium serotinum</i>	FAC+	0	
grass-leaved goldenrod	<i>Euthamia graminifolia</i>	FACW-	3	
tall fescue	<i>Festuca arundinacea</i>	FACU+	0	upland
green ash	<i>Fraxinus pennsylvanica</i>	FACW	1	
dwarf st. john's wort	<i>Hypericum mutilum</i>	FACW	4	exotic
common rush	<i>Juncus effusus</i>	OBL	3	
slender rush	<i>Juncus tenuis</i>	FAC	0	
tall wood sorrel	<i>Oxalis stricta</i>	FACU	0	upland
smooth lens grass	<i>Paspalum laeve</i>	FACW-	2	
smartweed (formerly polygonum punctatum)	<i>Persicaria punctata</i>	OBL	3	dominant
pennsylvania smartweed	<i>Polygonum pensylvanicum</i>	FACW+	0	
allegheny blackberry	<i>Rubus allegheniensis</i>	FACU+	2	upland
green bulrush	<i>Scirpus atrovirens</i>	OBL	4	
yellow foxtail	<i>Setaria faberi</i>	FAC	0	exotic
carolina nightshade	<i>Solanum carolinense</i>	FACU-	0	upland
canada goldenrod	<i>Solidago canadensis</i>	FACU	0	upland
blue vervain	<i>Verbena hastata</i>	FACW+	3	
prairie ironweed	<i>Veronia fasciculata</i>	FACW	5	
total hydrophytic taxa observed				22
average of FQA (dominant wetland species only)				1.33333333
number of indicator taxa				0

# I-69 Wetland Quality Assessment Profile

Date Report Generated: 2/17/2006  
Wetland site: Section 1  
Data reference #: W10  
Date of site visit: 08/25/05  
Total wetland area: 0.068 acres

Wetland Impact #5

<b>Polygon Information</b>	
Polygon ID	0
Polygon Size (acres)	0.068
Wetland Community Type	SFB
<b>Red Flag (Special) Indicators</b>	
Special Hydrologic Conditions	N
Special Community Type	N
Rare-Threatened-Endangered Species	N
<b>Animal Habitat Measures</b>	
Wetland size and connectivity	3
Surrounding land use	2
Standing water	1
Dead woody material	1
Zonation and interspersation	1
Stratification	1
Tree canopy	1
Mature trees	1
<b>Animal Habitat Measure Score (min = 8, max = 24,</b>	<b>11</b>
<b>Animal Habitat Measure Rating</b>	<b>poor</b>
<b>Botanical Measures (all except exotics dependent upon community type)</b>	
Number of dominant plant taxa observed	1
Conservatism rating	1
Total hydrophytic taxa observed	2
Number of indicator taxa	1
Exotic species rating	2
<b>Botanical Measure Score (min = 5, max = 15),</b>	<b>7</b>
<b>Botanical Measure Rating</b>	<b>poor</b>
<b>Hydrology Measures</b>	
Water quality protection (= no. of yes answers)	4
Flood and storm water storage (= no. of yes answers)	3
<b>Site/Hydrology Score (min = 11, max = 33)</b>	<b>25</b>
<b>Site/Hydrology Rating</b>	<b>fair</b>

## In-WRAP Summary Sheet

Date Report Generated: 8-30-05  
Wetland site name: Sec 1-W10  
Data Reference # —  
Date of Site Visit: 8-25-05  
NWI polygons in Site (quadrangle and NWI id. numbers): —

### TIER 1 SUMMARY:

- a. Total wetland area (hectares): 0.0283 hectares (0.07 acres)  
b. Wetland size and connectivity - contribution to animal habitat:  
☒ Valuable ☐ More Favorable ☐ Favorable ☐ Neutral  
c. Surrounding land use - numerical rank (max. = 1): 0.5  
d. Value surrounding area adds to animal habitat: ☐ Valuable ☒ Favorable ☐ Low

### TIER 2 SUMMARY

NWI Polygon Id. —

- a. Indiana Wetland community type: seasonally-flooded basin  
b. Standing water - contribution to animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
c. Disturbances to site: Road  
d. Exotic species rating: ☐ Good ☒ Medium ☐ Poor  
e. Special Hydrologic Conditions Observed: none  
f. Special Community Type: none  
g. Rare-Threatened-Endangered Species: none  
h. Polygon Quality Descriptor: ☐ Good ☒ Medium ☐ Poor

### TIER 3A SUMMARY

- a. Dead woody material as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
b. Water quality protection - numerical rank (6 max.): 4 Rating: ☐ Good ☒ Medium ☐ Poor  
c. Flood and storm water storage - numerical rank (5 max.): 3 Rating: ☐ Good ☒ Medium ☐ Poor

### TIER 3B SUMMARY

- a. Zonation and interspersation as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
b. Stratification as indicator of animal habitat: ☐ Valuable ☒ Neutral  
c. Number of dominant plant taxa observed: 1 Rating: ☐ Good ☐ Medium ☒ Poor  
d. Average coefficient of conservatism: 0 Rating: ☐ Good ☐ Medium ☒ Poor  
e. Tree canopy as indicator of animal habitat: ☐ Valuable ☒ Neutral  
f. Mature trees as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
g. Total hydrophytic taxa observed: 16 Rating: ☐ Good ☒ Medium ☐ Poor  
h. Number of indicator taxa: 0 Rating: ☐ Good ☐ Medium ☒ Poor



# Indiana Wetland Routine Assessment Protocol

Project #: 030730/06  
1-W10

## Tier 1: Assessment Overview

### 1.1 Site Identification:

Project Site Name: 1-W10  
 Ownership (if known): —  
 USGS Topographic Quadrangle(s): Elberfeld  
 USGS Watershed 14-digit HUC: 05140202020050

Identify each National Wetland Inventory (NWI) Polygon within the project site (Polygon-specific data)

NWI Polygon ID #	<u>—</u>						
Cowardin Classification	<u>PEM-1-Bm</u>						
Polygon Size (hectares)	<u>0.0283</u>						

### 1.2 Site Visit:

Team Members: EMC & MWW  
 Company/Agency: JFNew  
 Date Assessed: 8-25-05 Time: 1045AM Weather Conditions: Sunny 80's

Note any unusual weather events that may have influenced the current conditions within this wetland system (e.g. recent heavy rains, an unusually dry season, an especially early spring, etc.):

### 1.3 Wetland Size:

Size of site being assessed: 0.0283 hectares = 0.07 acres  
 Size of total wetland complex (all contiguous wetland polygons): —

### 1.4 Site Setting:

Degree of isolation from other wetland complexes:

- ☒ Site is connected upstream and downstream with other wetlands
- ☐ Site is connected upstream with other channels
- ☐ Site is connected downstream with other wetlands
- ☐ Other wetlands are within 0.25 mile but not connected
- ☐ Site is isolated

General assessment of adjacent land use/land cover within 50 meters of the perimeter of the wetland site (indicate % abundance of each type):

- ☒ Native Vegetation- woodland
- ☐ Native Vegetation- old field/scrub
- ☒ Agriculture - tilled
- ☐ Agriculture- pasture
- ☐ Recreation- green space, mowed
- ☒ Road/Highway/Railroad Bed/Parking Lot
- ☐ Industrial
- ☐ Residential- single family
- ☐ Commercial or Multifamily Residential

Abundance: 70

50

10

$$0.4 + 0.1 + = 0.5$$

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**Tier 2 Individual Polygon: Preliminary Assessment** (for each wetland polygon present on-site)

**2.1 Wetland Geomorphic Setting and Surface Water Flow:**

- |   |  |
|---|--|
| <input type="checkbox"/> Depressional                             | <input checked="" type="checkbox"/> Floodplain |
| <input type="checkbox"/> Riverine (within the river/stream banks) | <input type="checkbox"/> Lacustrine            |
| <input type="checkbox"/> Slope                                    |  |

**2.2 Presence of Standing Water:**

Is standing water normally present in the polygon? ☐ Yes ☒ No

If yes, is the water greater than 2 meters in depth? ☐ Yes ☐ No

Is standing water normally present in an adjacent polygon? ☐ Yes ☐ No

**2.3 Apparent Hydroperiod:**

- |  |   |
|--|---|
| <input type="checkbox"/> Permanently Flooded                                 | <input type="checkbox"/> Artificially Flooded |
| <input type="checkbox"/> Seasonally Flooded                                  | <input type="checkbox"/> Artificially Drained |
| <input checked="" type="checkbox"/> Saturated (surface water seldom present) |   |

**2.4 Soil Type:**

- ☐ Organic (ie. Peat, etc.)  
☒ Mineral  
☐ Both Mineral and Organic Present

**2.5 Wetland Community Type for this polygon (See Key to Wetland Communities of Indiana):**

Seasonally-Flooded Basin

**2.6 Disturbances of Hydrology: None**

- |                                   |  |
|-----------------------------------|--|
| <input type="checkbox"/> Ditching | <input checked="" type="checkbox"/> Road or Railroad Embankment    |
| <input type="checkbox"/> Tiles    | <input type="checkbox"/> Culvert                                   |
| <input type="checkbox"/> Dams     | <input type="checkbox"/> Other Human Disturbances to the Hydrology |
- Describe: \_\_\_\_\_

**2.7 Presence of Invasive Exotic Vegetation:**

- |   |  |
|---|--|
| <input type="checkbox"/> Garlic Mustard     | <input type="checkbox"/> Glossy Buckthorn                      |
| <input type="checkbox"/> <i>Phragmites</i>  | <input type="checkbox"/> Reed Canary Grass                     |
| <input type="checkbox"/> Purple Loosestrife | <input checked="" type="checkbox"/> Other <u>all scattered</u> |
- List: see attached list

**2.8 Presence of Special Hydrologic Conditions (ie. seeps, wet slopes, floating mats):**

n/a

**2.9 Presence of Special Community Types: None**

- ☐ Bog ☐ Fen ☐ Wet Sand/ Muck Flats or Marl Seeps ☐ Sinkhole pond or swamp

**2.10 Presence of Known Federal or Indiana Rare, Threatened, or Endangered Species (RTES):**

- ☒ None Observed or Known To Be Present  
☐ RTES Present (list): \_\_\_\_\_

**2.11 Wetland Polygon Quality Descriptor (see Wetland Quality Descriptions, and check one below):**

- ☐ Good ☒ Medium ☐ Poor

NWI Polygon ID #: \_\_\_\_\_

Project #: 030730 / 06  
1-W10

### Tier 3a Individual Polygon: Rapid Hydrology Indicators

#### 3a.1 Notable Features That Influence Water Quality and Hydrology:

Estimate Herbaceous Plant Cover (%) in the Polygon: ☒ 100-75 ☐ 75-50 ☐ 50-25 ☐ <25

Estimated Woody Plant Foliar Coverage in the Polygon ☐ 100-75 ☐ 75-50 ☐ 50-25 ☒ <25

Amount of Dead Woody Material on the Soil Surface:

☒ Nil (<5% cover) ☐ Scattered (5-15% cover) ☐ Frequent (>20% cover)

#### 3a.2 Water Quality Protection Questions:

1. ☒ Yes ☐ No The wetland has a significant amount of vegetative (specifically herbaceous and wood plants) density to potentially uptake dissolved nutrients.
2. ☒ Yes ☐ No Managed Water (eg. Municipal or storm water drainage, agricultural drainage outlet, industrial or municipal wastewater) is *not* discharged into the wetland polygon.

If the wetland in question is a depressional wetland, respond to questions 3a. If not, answer 3b.

- 3a. ☐ Yes ☐ No The wetland has a shape or flow that allows for the settling out of suspended materials before the water reaches the center of the wetland.
- 3b. ☒ Yes ☐ No The position of the wetland in the landscape is such that run-off is held or filtered before entering a surface body of water down-gradient.
4. ☐ Yes ☒ No Within 100 meters of its borders, the wetland *lacks* steep slopes, large impervious areas, moderate slopes with row cropping, or areas of severe overgrazing.
5. ☐ Yes ☒ No There are recreational lakes, fishable or navigable watercourses, or water supply sources down-gradient in the local watershed.
6. ☒ Yes ☐ No There is a vegetative buffer area (>15 meters wide), or another wetland polygon (areas where overland flow can be filtered) located upland and adjacent to the wetland polygon. If yes, describe the buffer area width and slope:

Ave. buffer width (meters): 10 m Approx. slope (%): 15%

#### 3a.2 Water Quality Protection Questions:

If the wetland in question is a depressional wetland, answer 1a. If not, answer 1b.

- 1a. ☐ Yes ☐ No The wetland is surrounded by a buffer of natural vegetation (forested, old field, scrub) that will slow overland flow into the wetland.
- 1b. ☐ Yes ☒ No There is a significant of microtopography or vegetative density within the wetland to reduce the velocity of water leaving the wetland.
2. ☒ Yes ☐ No The wetland *lacks* man-made structures that would speed the flow of water from the wetland (eg. tiles, culverts, ditches).
3. ☒ Yes ☐ No The flood potential of the local watershed in which the wetland is located is high (history of flood damages).
4. ☐ Yes ☒ No The wetland is located in a watershed in which the majority of the upland soils are clayey and impermeable, or bedrock is within two feet of the top of the soil profile.
5. ☒ Yes ☐ No The wetland is located in a watershed in which there are highly modified conditions due to existing development. (e.g. >5% of area is row crop, commercial, or residential use)



NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

### Tier 3b Individual Polygon: Rapid Vegetation Description

#### 3b.1 Zoning and Interspersion:

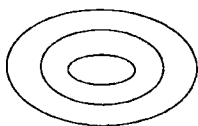
1. How many vegetation zones are evident in this wetland polygon? 1

1b. If only one vegetation zone is evident, which best describes the site?

- ☐ Polygon composed of a mosaic of small vegetation patches, hummocks, or tussocks; heterogeneous textures across the polygon
- ☒ Polygon composed of a single vegetation type with more or less uniform texture across the polygon

2. If more than one vegetation zone is present in the polygon, which interspersion diagram most closely represents the distribution of these zones?

☐ Type One Interspersion



☐ Type Two Interspersion



#### 3b.2 Dominant Plant Species: Vegetation Zone A

#### Observation Point #1

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☒ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☒ >90%

Is there notable layering/stratification in this vegetation zone?

- ☐ Yes    ☒ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a Echinochloa crusgali  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a n/a  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a n/a  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Tree and Shrub Canopy:

- ☒ nil    ☐ separate, seldom touching    ☐ often touching    ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes    ☒ No

Other remarks (include personal comments about what adds to or detracts from the quality of this wetland site)

highly disturbed  
acts as filter & buffer for nearby stream

NWI Polygon ID #: \_\_\_\_\_

Project #: 030930 / 00

**3b.2 Dominant Plant Species: Vegetation Zone B**

Observation Point #1

1-W10

Roll/Photo number(s): \_\_\_\_\_

(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a \_\_\_\_\_  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Tree and Shrub Canopy:

☐ nil    ☐ separate, seldom touching    ☒ often touching    ☐ more or less closed

Mature trees (>12" dbh) present:    ☐ Yes    ☐ No

Other remarks (include personal comments about what adds to or detracts from the quality of this wetland site)

**3b.2 Dominant Plant Species: Vegetation Zone C**

Observation Point #1

Roll/Photo number(s): \_\_\_\_\_

(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25%    ☒ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a \_\_\_\_\_  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**3b.2 Dominant Plant Species: Vegetation Zone C (cont'd)**

Tree and Shrub Canopy:

☐ nil ☐ separate, seldom touching ☐ often touching ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

---

**3b.2 Dominant Plant Species: Vegetation Zone D**

**Observation Point #1**

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25% ☐ 25-50% ☐ 50-75% ☐ 75-90% ☐ >90%

Is there notable layering/stratification in this vegetation zone? ☐ Yes ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a	_____	e	_____
b	_____	f	_____
c	_____	g	_____
d	_____	h	_____

Dominant **Shrub** Species listed in order of relative abundance:

a	_____	c	_____
b	_____	d	_____

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a	_____	c	_____
b	_____	d	_____

Tree and Shrub Canopy:

☐ nil ☐ separate, seldom touching ☐ often touching ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

---



<b>Sec1-w10</b>				
<b>Common Name</b>	<b>Botanical Name</b>	<b>Indicator</b>	<b>FQA</b>	<b>notes</b>
green amaranth	<i>Amaranthus hybridus</i>	UPL	0	exotic/upland
three-seeded mercury	<i>Acalypha virginica</i>	FACU	0	upland
common burdock	<i>Arctium minus</i>	UPL	0	exotic/upland
panicked aster	<i>Aster simplex</i>	FACW	3	
sedge	<i>Carex</i> sp.	FACW	2	
spotted creeping spurge	<i>Chamaesyce maculata</i>	FACU-	0	upland
field bindweed	<i>Convolvulus arvensis</i>	UPL	0	exotic/upland
straw-color flatsedge	<i>Cyperus strigosus</i>	FACW	0	
barnyard grass	<i>Echinochloa crusgalli</i>	FACW	0	dominant/ exotic
yerba de tajo	<i>Eclipta prostrata</i>	FACW	3	
blunt spikerush	<i>Eleocharis obtusa</i>	OBL	1	
late boneset	<i>Eupatorium serotinum</i>	FAC+	0	
slender rush	<i>Juncus tenuis</i>	FAC	0	
fringed loosestrife	<i>Lysimachia ciliata</i>	FACW	4	
moneywort	<i>Lysimachia nummularia</i>	FACW+	0	exotic
smooth lens grass	<i>Paspalum laeve</i>	FACW-	2	
smartweed (formerly polygonum punctatum)	<i>Persicaria punctata</i>	OBL	3	
common plantain	<i>Plantago major</i>	FAC+	0	
polygonum buxiforme	<i>Polygonum buxiforme</i>	FAC-	0	upland
pennsylvania smartweed	<i>Polygonum pensylvanicum</i>	FACW+	0	
curly dock	<i>Rumex crispus</i>	FAC+	0	
prairie ironweed	<i>Veronia fasciculata</i>	FACW	5	
total hydrophytic taxa observed			16	
average of FQA (dominant wetland species only)			0	
number of indicator taxa			0	

# I-69 Wetland Quality Assessment Profile

Date Report Generated: 2/17/2006  
Wetland site: Section 1  
Data reference # W17 Wetland Impact #6  
Date of site visit: 08/24/05  
Total wetland area: 0.109 acres

<b>Polygon Information</b>	
Polygon ID	0
Polygon Size (acres)	0.109
Wetland Community Type	WM
<b>Red Flag (Special) Indicators</b>	
Special Hydrologic Conditions	N
Special Community Type	N
Rare-Threatened-Endangered Species	N
<b>Animal Habitat Measures</b>	
Wetland size and connectivity	3
Surrounding land use	2
Standing water	1
Dead woody material	1
Zonation and interspersion	3
Stratification	1
Tree canopy	1
Mature trees	1
<b>Animal Habitat Measure Score (min = 8, max = 24,</b>	<b>13</b>
<b>Animal Habitat Measure Rating</b>	<b>poor</b>
<b>Botanical Measures (all except exotics dependent upon community type)</b>	
Number of dominant plant taxa observed	1
Conservatism rating	1
Total hydrophytic taxa observed	3
Number of indicator taxa	1
Exotic species rating	2
<b>Botanical Measure Score (min = 5, max = 15),</b>	<b>8</b>
<b>Botanical Measure Rating</b>	<b>poor</b>
<b>Hydrology Measures</b>	
Water quality protection (= no. of yes answers)	3
Flood and storm water storage (= no. of yes answers)	3
<b>Site/Hydrology Score (min = 11, max = 33)</b>	<b>23</b>
<b>Site/Hydrology Rating</b>	<b>fair</b>

## In-WRAP Summary Sheet

Date Report Generated: 8-30-05  
Wetland site name: Sec1-W17  
Data Reference # —  
Date of Site Visit: 8-24-05  
NWI polygons in Site (quadrangle and NWI id. numbers): —

### TIER 1 SUMMARY:

- a. Total wetland area (hectares): 0.0445 hectares (0.11 acres)  
b. Wetland size and connectivity - contribution to animal habitat:  
☒ Valuable ☐ More Favorable ☐ Favorable ☐ Neutral  
c. Surrounding land use - numerical rank (max. = 1): 0.44  
d. Value surrounding area adds to animal habitat: ☐ Valuable ☒ Favorable ☐ Low

### TIER 2 SUMMARY

NWI Polygon Id. —

- a. Indiana Wetland community type: wet meadow  
b. Standing water - contribution to animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
c. Disturbances to site: farming-herbicide  
d. Exotic species rating: ☐ Good ☒ Medium ☐ Poor  
e. Special Hydrologic Conditions Observed: none  
f. Special Community Type: none  
g. Rare-Threatened-Endangered Species: none  
h. Polygon Quality Descriptor: ☐ Good ☒ Medium ☐ Poor

### TIER 3A SUMMARY

- a. Dead woody material as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
b. Water quality protection - numerical rank (6 max.): 3 Rating: ☐ Good ☒ Medium ☐ Poor  
c. Flood and storm water storage - numerical rank (5 max.): 3 Rating: ☐ Good ☒ Medium ☐ Poor

### TIER 3B SUMMARY

- a. Zonation and interspersation as indicator of animal habitat: ☒ Valuable ☐ Favorable ☐ Neutral  
b. Stratification as indicator of animal habitat: ☐ Valuable ☒ Neutral  
c. Number of dominant plant taxa observed: 3 Rating: ☐ Good ☐ Medium ☒ Poor  
d. Average coefficient of conservatism: 1.33 Rating: ☐ Good ☐ Medium ☒ Poor  
e. Tree canopy as indicator of animal habitat: ☐ Valuable ☒ Neutral  
f. Mature trees as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
g. Total hydrophytic taxa observed: 23 Rating: ☒ Good ☐ Medium ☐ Poor  
h. Number of indicator taxa: 1 Rating: ☐ Good ☐ Medium ☒ Poor



**Tier 1: Assessment Overview****1.1 Site Identification:**

Project Site Name: W03013 SPCL-W17  
 Ownership (if known): \_\_\_\_\_  
 USGS Topographic Quadrangle(s): Francisco  
 USGS Watershed 14-digit HUC: 051402 0202 00 70

Identify each National Wetland Inventory (NWI) Polygon within the project site (Polygon-specific data)

NWI Polygon ID #	—						
Cowardin Classification	PEN-1-B-r						
Polygon Size (hectares)	0.0445						

**1.2 Site Visit:**

Team Members: EMC, MW  
 Company/Agency: JENew  
 Date Assessed: 8-29-05 Time: 10 AM Weather Conditions: Sunny, 70's

Note any unusual weather events that may have influenced the current conditions within this wetland system (e.g. recent heavy rains, an unusually dry season, an especially early spring, etc.):

**1.3 Wetland Size:**

Size of site being assessed: 0.0445 hectares = 0.11 acres  
 Size of total wetland complex (all contiguous wetland polygons): —

**1.4 Site Setting:**

Degree of isolation from other wetland complexes:

- ☒ Site is connected upstream and downstream with other wetlands  
☐ Site is connected upstream with other channels  
☐ Site is connected downstream with other wetlands  
☐ Other wetlands are within 0.25 mile but not connected  
☐ Site is isolated

General assessment of adjacent land use/land cover within 50 meters of the perimeter of the wetland site (indicate % abundance of each type):

- ☒ Native Vegetation- woodland  
☐ Native Vegetation- old field/scrub  
☒ Agriculture - tilled  
☐ Agriculture- pasture  
☐ Recreation- green space, mowed  
☐ Road/Highway/Railroad Bed/Parking Lot  
☐ Industrial  
☐ Residential- single family  
☐ Commercial or Multifamily Residential

Abundance: 30

70

$$0.3 + 0.14 = 0.44$$

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**Tier 2 Individual Polygon: Preliminary Assessment** (for each wetland polygon present on-site)

**2.1 Wetland Geomorphic Setting and Surface Water Flow:**

- |   |                                     |
|---|-------------------------------------|
| <input checked="" type="checkbox"/> Depressional                  | <input type="checkbox"/> Floodplain |
| <input type="checkbox"/> Riverine (within the river/stream banks) | <input type="checkbox"/> Lacustrine |
| <input type="checkbox"/> Slope                                    |                                     |

**2.2 Presence of Standing Water:**

Is standing water normally present in the polygon? ☐ Yes ☒ No

If yes, is the water greater than 2 meters in depth? ☐ Yes ☐ No

Is standing water normally present in an adjacent polygon? ☐ Yes ☐ No

**2.3 Apparent Hydroperiod:**

- |  |   |
|--|---|
| <input type="checkbox"/> Permanently Flooded                                 | <input type="checkbox"/> Artificially Flooded |
| <input type="checkbox"/> Seasonally Flooded                                  | <input type="checkbox"/> Artificially Drained |
| <input checked="" type="checkbox"/> Saturated (surface water seldom present) |   |

**2.4 Soil Type:**

- ☐ Organic (ie. Peat, etc.)  
☒ Mineral  
☐ Both Mineral and Organic Present

**2.5 Wetland Community Type for this polygon (See Key to Wetland Communities of Indiana):**

wet meadow

**2.6 Disturbances of Hydrology: None**

- |                                   |   |
|-----------------------------------|---|
| <input type="checkbox"/> Ditching | <input type="checkbox"/> Road or Railroad Embankment                          |
| <input type="checkbox"/> Tiles    | <input type="checkbox"/> Culvert  |
| <input type="checkbox"/> Dams     | <input checked="" type="checkbox"/> Other Human Disturbances to the Hydrology |

Describe: herbicide spraying near wetland farming

**2.7 Presence of Invasive Exotic Vegetation:**

- |   |  |
|---|--|
| <input type="checkbox"/> Garlic Mustard     | <input type="checkbox"/> Glossy Buckthorn                      |
| <input type="checkbox"/> Phragmites         | <input type="checkbox"/> Reed Canary Grass                     |
| <input type="checkbox"/> Purple Loosestrife | <input checked="" type="checkbox"/> Other <u>all scattered</u> |

List: see attached list

**2.8 Presence of Special Hydrologic Conditions (ie. seeps, wet slopes, floating mats):**

n/a

**2.9 Presence of Special Community Types: None**

- ☐ Bog ☐ Fen ☐ Wet Sand/ Muck Flats or Marl Seeps ☐ Sinkhole pond or swamp

**2.10 Presence of Known Federal or Indiana Rare, Threatened, or Endangered Species (RTES):**

- ☒ None Observed or Known To Be Present  
☐ RTES Present (list): \_\_\_\_\_

**2.11 Wetland Polygon Quality Descriptor (see Wetland Quality Descriptions, and check one below):**

- ☐ Good ☒ Medium ☐ Poor

NWI Polygon ID #: \_\_\_\_\_

Project #: 030730 / α

W 03013

### Tier 3a Individual Polygon: Rapid Hydrology Indicators

#### 3a.1 Notable Features That Influence Water Quality and Hydrology:

Estimate Herbaceous Plant Cover (%) in the Polygon: ☒ 100-75 ☐ 75-50 ☐ 50-25 ☐ <25

Estimated Woody Plant Foliar Coverage in the Polygon ☐ 100-75 ☐ 75-50 ☐ 50-25 ☒ <25

Amount of Dead Woody Material on the Soil Surface:

☒ Nil (<5% cover) ☐ Scattered (5-15% cover) ☐ Frequent (>20% cover)

#### 3a.2 Water Quality Protection Questions:

1. ☒ Yes ☐ No The wetland has a significant amount of vegetative (specifically herbaceous and wood plants) density to potentially uptake dissolved nutrients.
2. ☒ Yes ☐ No Managed Water (eg. Municipal or storm water drainage, agricultural drainage outlet, industrial or municipal wastewater) is **not** discharged into the wetland polygon.

If the wetland in question is a depressional wetland, respond to questions 3a. If not, answer 3b.

- 3a. ☐ Yes ☒ No The wetland has a shape or flow that allows for the settling out of suspended materials before the water reaches the center of the wetland.
- 3b. ☐ Yes ☐ No The position of the wetland in the landscape is such that run-off is held or filtered before entering a surface body of water down-gradient.
4. ☐ Yes ☒ No Within 100 meters of its borders, the wetland **lacks** steep slopes, large impervious areas, moderate slopes with row cropping, or areas of severe overgrazing.
5. ☐ Yes ☒ No There are recreational lakes, fishable or navigable watercourses, or water supply sources down-gradient in the local watershed.
6. ☒ Yes ☐ No There is a vegetative buffer area (>15 meters wide), or another wetland polygon (areas where overland flow can be filtered) located upland and adjacent to the wetland polygon. If yes, describe the buffer area width and slope:

Ave. buffer width (meters): 250 m

Approx. slope (%): >15%

#### 3a.2 Water Quality Protection Questions:

If the wetland in question is a depressional wetland, answer 1a. If not, answer 1b.

- 1a. ☒ Yes ☐ No The wetland is surrounded by a buffer of natural vegetation (forested, old field, scrub) that will slow overland flow into the wetland.
- 1b. ☐ Yes ☐ No There is a significant of microtopography or vegetative density within the wetland to reduce the velocity of water leaving the wetland.
2. ☒ Yes ☐ No The wetland **lacks** man-made structures that would speed the flow of water from the wetland (eg. tiles, culverts, ditches).
3. ☐ Yes ☒ No The flood potential of the local watershed in which the wetland is located is high (history of flood damages).
4. ☐ Yes ☒ No The wetland is located in a watershed in which the majority of the upland soils are clayey and impermeable, or bedrock is within two feet of the top of the soil profile.
5. ☒ Yes ☐ No The wetland is located in a watershed in which there are highly modified conditions due to existing development. (e.g. >5% of area is row crop, commercial, or residential use)



NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

### Tier 3b Individual Polygon: Rapid Vegetation Description

#### 3b.1 Zoning and Interspersion:

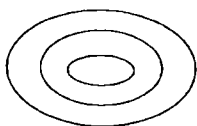
1. How many vegetation zones are evident in this wetland polygon? 1

1b. If only one vegetation zone is evident, which best describes the site?

- ☒ Polygon composed of a mosaic of small vegetation patches, hummocks, or tussocks; heterogeneous textures across the polygon
- ☐ Polygon composed of a single vegetation type with more or less uniform texture across the polygon

2. If more than one vegetation zone is present in the polygon, which interspersion diagram most closely represents the distribution of these zones?

☐ Type One Interspersion



☐ Type Two Interspersion



#### 3b.2 Dominant Plant Species: Vegetation Zone A

#### Observation Point #1

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☒ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☒ >90%

Is there notable layering/stratification in this vegetation zone?

- ☐ Yes    ☒ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a Echinachloa megali  
b Eupatorium perfoliatum  
c " "  
d horsetail

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a n/a  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a n/a  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Tree and Shrub Canopy:

- ☒ nil    ☐ separate, seldom touching    ☐ often touching    ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes    ☒ No

Other remarks (include personal comments about what adds to or detracts from the quality of this wetland site)

+ = butterfly habitat, filters runoff from ag field  
amphibian

NWI Polygon ID #: \_\_\_\_\_

Project #: 030730/06  
W03013

**3b.2 Dominant Plant Species: Vegetation Zone B**

Observation Point #1

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a \_\_\_\_\_  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Tree and Shrub Canopy:

☐ nil    ☐ separate, seldom touching    ☒ often touching    ☐ more or less closed

Mature trees (>12" dbh) present:    ☐ Yes    ☐ No

Other remarks (include personal comments about what adds to or detracts from the quality of this wetland site)

\_\_\_\_\_

**3b.2 Dominant Plant Species: Vegetation Zone C**

Observation Point #1

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25%    ☒ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a \_\_\_\_\_  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

<b>Sec1-w17</b>				
<b>Common Name</b>	<b>Botanical Name</b>	<b>Indicator</b>	<b>FQA</b>	<b>notes</b>
redtop	<i>Agrostis alba</i>	FACW	0	exotic
three-seeded mercury	<i>Acalypha virginica</i>	FACU	0	upland
slender false foxglove	<i>Agalinus tenuifolia</i>	FACW	4	
annual ragweed	<i>Ambrosia artemisiifolia</i>	FACU	0	upland
giant ragweed	<i>Ambrosia trifida</i>	FAC+	0	
fox sedge	<i>Carex vulpinoidea</i>	OBL	2	
canada horseweed	<i>Conyza canadensis</i>	FAC-	0	upland
trefoil	<i>Desmodium</i> sp.	FACU	0	upland
hairy crab grass	<i>Digitaria sanguinalis</i>	FACU	0	exotic/upland
barnyard grass	<i>Echinochloa crusgalli</i>	FACW	0	dominant/ exotic
common boneset	<i>Eupatorium perfoliatum</i>	FACW+	4	dominant
late boneset	<i>Eupatorium serotinum</i>	FAC+	0	dominant
grass-leaved goldenrod	<i>Euthamia graminifolia</i>	FACW-	3	
fescue	<i>Festuca</i> sp.	UPL	0	upland
dwarf st. john's wort	<i>Hypericum mutilum</i>	FACW	4	exotic
short-headed rush	<i>Juncus brachycephalus</i>	OBL	7	
common rush	<i>Juncus effusus</i>	OBL	3	
inland rush	<i>Juncus interior</i>	FAC+	3	
slender rush	<i>Juncus tenuis</i>	FAC	0	
cardinal flower	<i>Lobelia cardinalis</i>	OBL	4	
indian tobacco	<i>Lobelia inflata</i>	FACU-	3	upland
great blue lobelia	<i>Lobelia siphilitica</i>	FACW+	3	
bushy seedbox	<i>Ludwigia alternifolia</i>	OBL	3	
narrow-leaf primrose willow	<i>Ludwigia polycarpa</i>	OBL	4	
allegghany monkeyflower	<i>Mimulus ringens</i>	OBL	4	
pennsylvania smartweed	<i>Polygonum pennsylvanicum</i>	FACW+	0	
cottonwood	<i>Populus deltoides</i>	FAC+	1	
curly dock	<i>Rumex crispus</i>	FAC+	0	
green bulrush	<i>Scirpus atrovirens</i>	OBL	4	
canada goldenrod	<i>Solidago canadensis</i>	FACU	0	upland
viscid field sow thistle	<i>Sonchus arvensis</i>	FAC-	0	exotic/upland
perennial woolly-bean	<i>Strophostyles umbellata</i>	FACU	4	upland
blue vervain	<i>Verbena hastata</i>	FACW+	3	
total hydrophytic taxa observed			23	
average of FQA (dominant wetland species only)			1.333333	
number of indicator taxa			1	



# I-69 Wetland Quality Assessment Profile

Date Report Generated: 2/17/2006  
Wetland site: Section1  
Data reference # W18  
Date of site visit: 08/24/05  
Total wetland area: 0.125 acres

Wetland Impact #7

<b>Polygon Information</b>	
Polygon ID	0
Polygon Size (acres)	0.125
Wetland Community Type	WM
<b>Red Flag (Special) Indicators</b>	
Special Hydrologic Conditions	N
Special Community Type	N
Rare-Threatened-Endangered Species	N
<b>Animal Habitat Measures</b>	
Wetland size and connectivity	2
Surrounding land use	1
Standing water	1
Dead woody material	1
Zonation and interspersion	1
Stratification	1
Tree canopy	1
Mature trees	1
<b>Animal Habitat Measure Score (min = 8, max = 24,</b>	<b>9</b>
<b>Animal Habitat Measure Rating</b>	<b>poor</b>
<b>Botanical Measures (all except exotics dependent upon community type)</b>	
Number of dominant plant taxa observed	1
Conservatism rating	1
Total hydrophytic taxa observed	1
Number of indicator taxa	1
Exotic species rating	2
<b>Botanical Measure Score (min = 5, max = 15,</b>	<b>6</b>
<b>Botanical Measure Rating</b>	<b>poor</b>
<b>Hydrology Measures</b>	
Water quality protection (= no. of yes answers)	2
Flood and storm water storage (= no. of yes answers)	1
<b>Site/Hydrology Score (min = 11, max = 33)</b>	<b>17</b>
<b>Site/Hydrology Rating</b>	<b>poor</b>

## In-WRAP Summary Sheet

Date Report Generated: 8-30-05  
Wetland site name: Seri-W18  
Data Reference # —  
Date of Site Visit: 8-24-05  
NWI polygons in Site (quadrangle and NWI id. numbers): —

### TIER 1 SUMMARY:

- a. Total wetland area (hectares): 0.0486 hectares (0.12 acres)
- b. Wetland size and connectivity - contribution to animal habitat:  
☐ Valuable ☒ More Favorable ☐ Favorable ☐ Neutral
- c. Surrounding land use - numerical rank (max. = 1): 0.2
- d. Value surrounding area adds to animal habitat: ☐ Valuable ☐ Favorable ☒ Low

### TIER 2 SUMMARY

NWI Polygon Id. —

- a. Indiana Wetland community type: wet meadow
- b. Standing water - contribution to animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral
- c. Disturbances to site: ditching
- d. Exotic species rating: ☐ Good ☒ Medium ☐ Poor
- e. Special Hydrologic Conditions Observed: none
- f. Special Community Type: none
- g. Rare-Threatened-Endangered Species: none
- h. Polygon Quality Descriptor: ☐ Good ☒ Medium ☐ Poor

### TIER 3A SUMMARY

- a. Dead woody material as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral
- b. Water quality protection - numerical rank (6 max.): 2 Rating: ☐ Good ☐ Medium ☒ Poor
- c. Flood and storm water storage - numerical rank (5 max.): 1 Rating: ☐ Good ☐ Medium ☒ Poor

### TIER 3B SUMMARY

- a. Zonation and interspersions as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral
- b. Stratification as indicator of animal habitat: ☐ Valuable ☒ Neutral
- c. Number of dominant plant taxa observed: 0 Rating: ☐ Good ☐ Medium ☒ Poor
- d. Average coefficient of conservatism: 0 Rating: ☐ Good ☐ Medium ☒ Poor
- e. Tree canopy as indicator of animal habitat: ☐ Valuable ☒ Neutral
- f. Mature trees as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral
- g. Total hydrophytic taxa observed: 10 Rating: ☐ Good ☐ Medium ☒ Poor
- h. Number of indicator taxa: 1 Rating: ☐ Good ☐ Medium ☒ Poor

**Tier 1: Assessment Overview****1.1 Site Identification:**

Project Site Name: W03014 Sec 1-W18  
 Ownership (if known): \_\_\_\_\_  
 USGS Topographic Quadrangle(s): Francisco  
 USGS Watershed 14-digit HUC: 05140202020070

Identify each National Wetland Inventory (NWI) Polygon within the project site (Polygon-specific data)

NWI Polygon ID #	—						
Cowardin Classification	PEM1B-N						
Polygon Size (hectares)	0.0486						

**1.2 Site Visit:**

Team Members: EMC, MW  
 Company/Agency: JFNEW  
 Date Assessed: 8-24-05 Time: 1030 AM Weather Conditions: sunny, 70's

Note any unusual weather events that may have influenced the current conditions within this wetland system (e.g. recent heavy rains, an unusually dry season, an especially early spring, etc.):  
 \_\_\_\_\_

**1.3 Wetland Size:**

Size of site being assessed: 0.0486 hectares = 0.12 acres  
 Size of total wetland complex (all contiguous wetland polygons): —

**1.4 Site Setting:**

Degree of isolation from other wetland complexes:

- ☐ Site is connected upstream and downstream with other wetlands  
☒ Site is connected upstream with other channels  
☐ Site is connected downstream with other wetlands  
☐ Other wetlands are within 0.25 mile but not connected  
☐ Site is isolated

General assessment of adjacent land use/land cover within 50 meters of the perimeter of the wetland site (indicate % abundance of each type):

- |  |                  |
|--|------------------|
| <input type="checkbox"/> Native Vegetation- woodland           | Abundance: _____ |
| <input type="checkbox"/> Native Vegetation- old field/scrub    | _____            |
| <input checked="" type="checkbox"/> Agriculture - tilled       | <u>100%</u>      |
| <input type="checkbox"/> Agriculture- pasture                  | _____            |
| <input type="checkbox"/> Recreation- green space, mowed        | _____            |
| <input type="checkbox"/> Road/Highway/Railroad Bed/Parking Lot | _____            |
| <input type="checkbox"/> Industrial                            | _____            |
| <input type="checkbox"/> Residential- single family            | _____            |
| <input type="checkbox"/> Commercial or Multifamily Residential | _____            |



NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**Tier 2 Individual Polygon: Preliminary Assessment** (for each wetland polygon present on-site)

**2.1 Wetland Geomorphic Setting and Surface Water Flow:**

- |   |                                     |
|---|-------------------------------------|
| <input checked="" type="checkbox"/> Depressional                  | <input type="checkbox"/> Floodplain |
| <input type="checkbox"/> Riverine (within the river/stream banks) | <input type="checkbox"/> Lacustrine |
| <input type="checkbox"/> Slope                                    |                                     |

**2.2 Presence of Standing Water:**

Is standing water normally present in the polygon? ☐ Yes ☒ No

If yes, is the water greater than 2 meters in depth? ☐ Yes ☐ No

Is standing water normally present in an adjacent polygon? ☐ Yes ☐ No

**2.3 Apparent Hydroperiod:**

- |  |   |
|--|---|
| <input type="checkbox"/> Permanently Flooded                                 | <input type="checkbox"/> Artificially Flooded |
| <input type="checkbox"/> Seasonally Flooded                                  | <input type="checkbox"/> Artificially Drained |
| <input checked="" type="checkbox"/> Saturated (surface water seldom present) |   |

**2.4 Soil Type:**

- ☐ Organic (ie. Peat, etc.)  
☒ Mineral  
☐ Both Mineral and Organic Present

**2.5 Wetland Community Type for this polygon (See Key to Wetland Communities of Indiana):**

wet meadow

**2.6 Disturbances of Hydrology: None**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Ditching | <input type="checkbox"/> Road or Railroad Embankment               |
| <input type="checkbox"/> Tiles               | <input type="checkbox"/> Culvert                                   |
| <input type="checkbox"/> Dams                | <input type="checkbox"/> Other Human Disturbances to the Hydrology |
- Describe: \_\_\_\_\_

**2.7 Presence of Invasive Exotic Vegetation:**

- |   |   |
|---|---|
| <input type="checkbox"/> Garlic Mustard     | <input type="checkbox"/> Glossy Buckthorn               |
| <input type="checkbox"/> <i>Phragmites</i>  | <input type="checkbox"/> Reed Canary Grass              |
| <input type="checkbox"/> Purple Loosestrife | <input checked="" type="checkbox"/> Other all scattered |

List: see attached list

**2.8 Presence of Special Hydrologic Conditions (ie. seeps, wet slopes, floating mats):**

n/a

**2.9 Presence of Special Community Types: None**

- ☐ Bog ☐ Fen ☐ Wet Sand/ Muck Flats or Marl Seeps ☐ Sinkhole pond or swamp

**2.10 Presence of Known Federal or Indiana Rare, Threatened, or Endangered Species (RTES):**

- ☒ None Observed or Known To Be Present  
☐ RTES Present (list): \_\_\_\_\_

**2.11 Wetland Polygon Quality Descriptor (see Wetland Quality Descriptions , and check one below):**

- ☐ Good ☒ Medium ☐ Poor

NWI Polygon ID #: \_\_\_\_\_

Project #: 036730/00  
W03014

### Tier 3a Individual Polygon: Rapid Hydrology Indicators

#### 3a.1 Notable Features That Influence Water Quality and Hydrology:

Estimate Herbaceous Plant Cover (%) in the Polygon: ☒ 100-75 ☐ 75-50 ☐ 50-25 ☐ <25

Estimated Woody Plant Foliar Coverage in the Polygon ☐ 100-75 ☐ 75-50 ☐ 50-25 ☒ <25

Amount of Dead Woody Material on the Soil Surface:

☒ Nil (<5% cover) ☐ Scattered (5-15% cover) ☐ Frequent (>20% cover)

#### 3a.2 Water Quality Protection Questions:

1. ☒ Yes ☐ No The wetland has a significant amount of vegetative (specifically herbaceous and wood plants) density to potentially uptake dissolved nutrients.
2. ☒ Yes ☐ No Managed Water (eg. Municipal or storm water drainage, agricultural drainage outlet, industrial or municipal wastewater) is **not** discharged into the wetland polygon.

If the wetland in question is a depressional wetland, respond to questions 3a. If not, answer 3b.

- 3a. ☐ Yes ☒ No The wetland has a shape or flow that allows for the settling out of suspended materials before the water reaches the center of the wetland.
- 3b. ☐ Yes ☐ No The position of the wetland in the landscape is such that run-off is held or filtered before entering a surface body of water down-gradient.
4. ☐ Yes ☒ No Within 100 meters of its borders, the wetland **lacks** steep slopes, large impervious areas, moderate slopes with row cropping, or areas of severe overgrazing.
5. ☐ Yes ☒ No There are recreational lakes, fishable or navigable watercourses, or water supply sources down-gradient in the local watershed.
6. ☐ Yes ☒ No There is a vegetative buffer area (>15 meters wide), or another wetland polygon (areas where overland flow can be filtered) located upland and adjacent to the wetland polygon. If yes, describe the buffer area width and slope:

Ave. buffer width (meters): \_\_\_\_\_ Approx. slope (%): \_\_\_\_\_

#### 3a.2 Water Quality Protection Questions:

If the wetland in question is a depressional wetland, answer 1a. If not, answer 1b.

- 1a. ☐ Yes ☒ No The wetland is surrounded by a buffer of natural vegetation (forested, old field, scrub) that will slow overland flow into the wetland.
- 1b. ☐ Yes ☐ No There is a significant of microtopography or vegetative density within the wetland to reduce the velocity of water leaving the wetland.
2. ☐ Yes ☒ No The wetland **lacks** man-made structures that would speed the flow of water from the wetland (eg. tiles, culverts, ditches).
3. ☐ Yes ☒ No The flood potential of the local watershed in which the wetland is located is high (history of flood damages).
4. ☐ Yes ☒ No The wetland is located in a watershed in which the majority of the upland soils are clayey and impermeable, or bedrock is within two feet of the top of the soil profile.
5. ☒ Yes ☐ No The wetland is located in a watershed in which there are highly modified conditions due to existing development. (e.g. >5% of area is row crop, commercial, or residential use)

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

### Tier 3b Individual Polygon: Rapid Vegetation Description

#### 3b.1 Zoning and Interspersion:

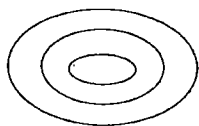
1. How many vegetation zones are evident in this wetland polygon? 1

1b. If only one vegetation zone is evident, which best describes the site?

- ☐ Polygon composed of a mosaic of small vegetation patches, hummocks, or tussocks; heterogeneous textures across the polygon
- ☒ Polygon composed of a single vegetation type with more or less uniform texture across the polygon

2. If more than one vegetation zone is present in the polygon, which interspersion diagram most closely represents the distribution of these zones?

☐ Type One Interspersion



☐ Type Two Interspersion



#### 3b.2 Dominant Plant Species: Vegetation Zone A

##### Observation Point #1

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☒ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☒ >90%

Is there notable layering/stratification in this vegetation zone?

- ☐ Yes    ☒ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a n/a  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a n/a  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a n/a  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Tree and Shrub Canopy:

- ☒ nil    ☐ separate, seldom touching    ☐ often touching    ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes    ☒ No

Other remarks (include personal comments about what adds to or detracts from the quality of this wetland site)



NWI Polygon ID #: \_\_\_\_\_

Project #: 030730/00

**3b.2 Dominant Plant Species: Vegetation Zone B**

**Observation Point #1**

W03014

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?    ☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a _____	e _____
b _____	f _____
c _____	g _____
d _____	h _____

Dominant **Shrub** Species listed in order of relative abundance:

a _____	c _____
b _____	d _____

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a _____	c _____
b _____	d _____

Tree and Shrub Canopy:

☐ nil    ☐ separate, seldom touching    ☒ often touching    ☐ more or less closed

Mature trees (>12" dbh) present:    ☐ Yes    ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

**3b.2 Dominant Plant Species: Vegetation Zone C**

**Observation Point #1**

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25%    ☒ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?    ☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a _____	e _____
b _____	f _____
c _____	g _____
d _____	h _____

Dominant **Shrub** Species listed in order of relative abundance:

a _____	c _____
b _____	d _____

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a _____	c _____
b _____	d _____

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**3b.2 Dominant Plant Species: Vegetation Zone C (cont'd)**

Tree and Shrub Canopy:

☐ nil ☐ separate, seldom touching ☐ often touching ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

---

**3b.2 Dominant Plant Species: Vegetation Zone D**

**Observation Point #1**

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25% ☐ 25-50% ☐ 50-75% ☐ 75-90% ☐ >90%

Is there notable layering/stratification in this vegetation zone? ☐ Yes ☐ No

**Dominant Herbaceous Species** (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a _____	e _____
b _____	f _____
c _____	g _____
d _____	h _____

**Dominant Shrub Species** listed in order of relative abundance:

a _____	c _____
b _____	d _____

**Dominant Tree Species** listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a _____	c _____
b _____	d _____

Tree and Shrub Canopy:

☐ nil ☐ separate, seldom touching ☐ often touching ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

---

<b>Sec1-w18</b>				
<b>Common Name</b>	<b>Botanical Name</b>	<b>Indicator</b>	<b>FQA</b>	<b>notes</b>
scarlet loosestrife	<i>Ammania robusta</i>	FACW	2	
field bindweed	<i>Convolvulus arvensis</i>	UPL	0	exotic/upland
conyza canadensis	<i>Conyza canadensis</i>	FAC-	0	upland
hairy crab grass	<i>Digitaria sanguinalis</i>	FACU	0	exotic/upland
barneyard grass	<i>Echinochloa crusgalli</i>	FACW	0	exotic
yerba de tajo	<i>Eclipta prostrata</i>	FACW	3	
late boneset	<i>Eupatorium serotinum</i>	FAC+	0	
dwarf st. john's wort	<i>Hypericum mutilum</i>	FACW	4	
canadian rush	<i>Juncus canadensis</i>	OBL	7	
false loosestrife	<i>Ludwegia polycarpa</i>	OBL	4	
pennsylvania smartweed	<i>Polygonum pensylvanicum</i>	FACW+	0	
curly dock	<i>Rumex crispus</i>	FAC+	0	exotic
horse-nettle	<i>Solanum carolinense</i>	FACU-	0	upland
viscid field sow thistle	<i>Sonchus arvensis</i>	FAC-	0	exotic/upland
total hydrophytic taxa observed			9	
average of FQA (dominant wetland species only)			0	
number of indicator taxa			1	



# I-69 Wetland Quality Assessment Profile

Date Report Generated: 2/17/2006  
Wetland site: Section 1  
Data reference #: W19  
Date of site visit: 07/20/04  
Total wetland area: 0.19 acres

Wetland Impact #8

<b>Polygon Information</b>	
Polygon ID	0
Polygon Size (acres)	0.190
Wetland Community Type	WM
<b>Red Flag (Special) Indicators</b>	
Special Hydrologic Conditions	N
Special Community Type	N
Rare-Threatened-Endangered Species	N
<b>Animal Habitat Measures</b>	
Wetland size and connectivity	2
Surrounding land use	2
Standing water	1
Dead woody material	1
Zonation and interspersion	3
Stratification	1
Tree canopy	1
Mature trees	1
<b>Animal Habitat Measure Score (min = 8, max = 24,</b>	<b>12</b>
<b>Animal Habitat Measure Rating</b>	<b>poor</b>
<b>Botanical Measures (all except exotics dependent upon community type)</b>	
Number of dominant plant taxa observed	1
Conservatism rating	1
Total hydrophytic taxa observed	1
Number of indicator taxa	1
Exotic species rating	2
<b>Botanical Measure Score (min = 5, max = 15),</b>	<b>6</b>
<b>Botanical Measure Rating</b>	<b>poor</b>
<b>Hydrology Measures</b>	
Water quality protection (= no. of yes answers)	4
Flood and storm water storage (= no. of yes answers)	2
<b>Site/Hydrology Score (min = 11, max = 33)</b>	<b>23</b>
<b>Site/Hydrology Rating</b>	<b>fair</b>

**Tier 1: Assessment Overview****1.1 Site Identification:**Project Site Name: Sec1-w19Ownership (if known): ----USGS Topographic Quadrangle(s): FranciscoUSGS Watershed 14-digit HUC: 05120209080030

Identify each National Wetland Inventory (NWI) Polygon within the project site (Polygon-specific data)

NWI Polygon ID #:	--						
Cowardin Classification:	PEM-1-B-n						
Polygon Size (hectares):							

**1.2 Site Visit:**Team Members: Sara Tofari, Christi DarcyCompany/Agency: JFNewDate Assessed: 7.20.2004 Time: \_\_\_\_\_ Weather Conditions: Sunny, warm

Note any unusual weather events that may have influenced the current conditions within this wetland system: (e.g. recent heavy rains, an unusually dry season, an especially early spring, etc.)

**1.3 Wetland Size:**Size of site being assessed: 0.19 acresSize of total wetland complex (all contiguous wetland polygons): 0.19 acres**1.4 Site Setting:**

Degree of isolation from other wetland complexes:

- ☐ Site is connected upstream and downstream with other wetlands  
☐ Site is connected upstream with other channels  
☐ Site is connected downstream with other wetlands  
☐ Other wetlands are within 0.25 mile but not connected  
☒ Site is isolated

General assessment of adjacent land use/land cover within 50 meters of the perimeter of the wetland site (indicate % abundance of each type):

- |   |                      |
|---|----------------------|
| <input checked="" type="checkbox"/> Native Vegetation- woodland | Abundance: <u>40</u> |
| <input type="checkbox"/> Native Vegetation- old field/scrub     | _____                |
| <input checked="" type="checkbox"/> Agriculture - tilled        | <u>20</u>            |
| <input checked="" type="checkbox"/> Agriculture- pasture        | <u>40</u>            |
| <input type="checkbox"/> Recreation- green space, mowed         | _____                |
| <input type="checkbox"/> Road/Highway/Railroad Bed/Parking Lot  | _____                |
| <input type="checkbox"/> Industrial                             | _____                |
| <input type="checkbox"/> Residential- single family             | _____                |
| <input type="checkbox"/> Commercial or Multifamily Residential  | _____                |

NWI Polygon ID #: \_\_\_\_\_ Project #: **030730/00**

**Tier 2 Individual Polygon: Preliminary Assessment** (for each wetland polygon present on-site)

**2.1 Wetland Geomorphic Setting and Surface Water Flow:**

- |   |                                     |
|---|-------------------------------------|
| <input checked="" type="checkbox"/> Depressional                  | <input type="checkbox"/> Floodplain |
| <input type="checkbox"/> Riverine (within the river/stream banks) | <input type="checkbox"/> Lacustrine |
| <input type="checkbox"/> Slope                                    |                                     |

**2.2 Presence of Standing Water:**

- Is standing water normally present in the polygon? ☐ Yes ☒ No
- If yes, is the water greater than 2 meters in depth? ☐ Yes ☐ No
- Is standing water normally present in an adjacent polygon? ☐ Yes ☐ No

**2.3 Apparent Hydroperiod:**

- |  |   |
|--|---|
| <input type="checkbox"/> Permanently Flooded                                 | <input type="checkbox"/> Artificially Flooded |
| <input type="checkbox"/> Seasonally Flooded                                  | <input type="checkbox"/> Artificially Drained |
| <input checked="" type="checkbox"/> Saturated (surface water seldom present) |   |

**2.4 Soil Type:**

- |   |
|---|
| <input type="checkbox"/> Organic (ie. Peat, etc.)         |
| <input checked="" type="checkbox"/> Mineral               |
| <input type="checkbox"/> Both Mineral and Organic Present |

**2.5 Wetland Community Type for this Polygon: (see Key to Wetland Communities of Indiana)**

**Wet Meadow**

**2.6 Disturbances of Hydrology:**

- |   |  |
|---|--|
| <input type="checkbox"/> Ditching         | <input type="checkbox"/> Road or Railroad Embankment               |
| <input checked="" type="checkbox"/> Tiles | <input type="checkbox"/> Culvert                                   |
| <input type="checkbox"/> Dams             | <input type="checkbox"/> Other Human Disturbances to the Hydrology |
- Describe: \_\_\_\_\_

**2.7 Presence of Invasive Exotic Vegetation: (Score as: S=Scattered, F=Frequent, or C=Common)**

- |   |  |
|---|--|
| <input type="checkbox"/> Garlic Mustard     | <input type="checkbox"/> Glossy Buckthorn  |
| <input type="checkbox"/> Phragmites         | <input type="checkbox"/> Reed Canary Grass |
| <input type="checkbox"/> Purple Loosestrife | <input checked="" type="checkbox"/> Other  |
- List: **echinocloa crusgalli (F)**

**2.8 Presence of Special Hydrologic Conditions: (ie. seeps, wet slopes, floating mats)**

**NA**

**2.9 Presence of Special Community Types:**

- ☐ Bog ☐ Fen ☐ Wet Sand/ Muck Flats or Marl Seeps ☐ Sinkhole pond or swamp

**2.10 Presence of Known Federal or Indiana Rare, Threatened, or Endangered Species (RTES):**

- ☒ None Observed or Known To Be Present: \_\_\_\_\_
- ☐ RTES Present (list): \_\_\_\_\_

**2.11 Wetland Polygon Quality Descriptor: (see Wetland Quality Descriptions, and check one below)**

- ☐ Good ☒ Medium ☐ Poor



### ***Tier 3a Individual Polygon: Rapid Hydrology Indicators***

#### **3a.1 Notable Features That Influence Water Quality and Hydrology:**

Estimate Herbaceous Plant Cover (%) in the Polygon: ☐ 100-75 ☒ 75-50 ☐ 50-25 ☐ <25

Estimated Woody Plant Foliar Coverage in the Polygon: ☐ 100-75 ☐ 75-50 ☐ 50-25 ☒ <25

Amount of Dead Woody Material on the Soil Surface:

☒ Nil (<5% cover) ☐ Scattered (5-15% cover) ☐ Frequent (>20% cover)

#### **3a.2 Water Quality Protection Questions:**

1. ☒ Yes ☐ No The wetland has a significant amount of vegetative (specifically herbaceous and wood plants) density to potentially uptake dissolved nutrients.
2. ☒ Yes ☐ No Managed Water (eg. Municipal or storm water drainage, agricultural drainage outlet, industrial or municipal wastewater) is **not** discharged into the wetland polygon.

If the wetland in question is a depressional wetland, respond to questions 3a. If not, answer 3b.

- 3a. ☒ Yes ☐ No The wetland has a shape or flow that allows for the settling out of suspended materials before the water reaches the center of the wetland.
- 3b. ☐ Yes ☐ No The position of the wetland in the landscape is such that run-off is held or filtered before entering a surface body of water down-gradient.
4. ☐ Yes ☒ No Within 100 meters of its borders, the wetland lacks steep slopes, large impervious areas, moderate slopes with row cropping, or areas of severe overgrazing.
5. ☐ Yes ☒ No There are recreational lakes, fishable or navigable watercourses, or water supply sources down-gradient in the local watershed.
6. ☒ Yes ☐ No There is a vegetative buffer area (>15 meters wide), or another wetland polygon (areas where overland flow can be filtered) located upland and adjacent to the wetland polygon. If yes, describe the buffer area width and slope:

Ave. buffer width (meters): >15 m Approx. slope (%): 3%

#### **3a.2 Water Quality Protection Questions:**

If the wetland in question is a depressional wetland, answer 1a. If not, answer 1b.

- 1a. ☒ Yes ☐ No The wetland is surrounded by a buffer of natural vegetation (forested, old field, scrub) that will slow overland flow into the wetland.
- 1b. ☐ Yes ☐ No There is a significant of microtopography or vegetative density within the wetland to reduce the velocity of water leaving the wetland.
2. ☐ Yes ☒ No The wetland lacks man-made structures that would speed the flow of water from the wetland (eg. Tiles, culverts, ditches).
3. ☐ Yes ☒ No The flood potential of the local watershed in which the wetland is located is high (history of flood damages).
4. ☐ Yes ☒ No The wetland is located in a watershed in which the majority of the upland soils are clayey and impermeable, or bedrock is within two feet of the top of the soil profile.
5. ☒ Yes ☐ No The wetland is located in a watershed in which there are highly modified conditions due to existing development. (e.g. >5% of area is row crop, commercial, or residential use).

### **Tier 3b Individual Polygon: Rapid Vegetation Description**

#### **3b.1 Zoning and Interspersion:**

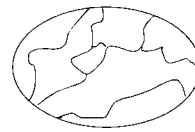
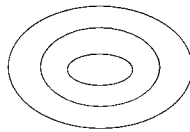
1. How many vegetation zones are evident in this wetland polygon? **1**

1b. If only one vegetation zone is evident, which best describes the site?

- ☒ Polygon composed of a mosaic of small vegetation patches, hummocks, or tussocks; heterogeneous textures across the polygon
- ☐ Polygon composed of a single vegetation type with more or less uniform texture across the polygon

2. If more than one vegetation zone is present in the polygon, which interspersion diagram most closely represents the distribution of these zones?

- ☐ Type One Interspersion ☒ Type Two Interspersion



#### **3b.2 Dominant Plant Species: Vegetation Zone A**

#### **Observation Point #1**

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☐ 10-25% ☐ 25-50% ☐ 50-75% ☐ 75-90% ☒ >90%

Is there notable layering/stratification in this vegetation zone? ☐ Yes ☒ No

Dominant **Herbaceous** Species listed in order of relative abundance: Mark with an "\*" any species that form extensive monocultural patches (ie. Covering more than 10% of the area)

a	<u><i>Echinochloa crusgalli</i></u>	e	_____
b	<u><i>Eleocharis obtusa</i></u>	f	_____
c	<u><i>Polygonum pennsylvanicum</i></u>	g	_____
d	<u><i>Polygonum lapathifolium</i></u>	h	_____

Dominant **Shrub** Species listed in order of relative abundance:

a	_____	c	_____
b	_____	d	_____

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a	_____	c	_____
b	_____	d	_____

Tree and Shrub Canopy:

- ☒ nil ☐ separate, seldom touching ☐ often touching ☐ more or less

Mature trees (>12" dbh) present: ☐ Yes ☒ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site):

<b>Sec1-w19</b>				
<b>Common Name</b>	<b>Botanical Name</b>	<b>Indicator</b>	<b>FQA</b>	<b>notes</b>
barnyard grass	<i>Echinochloa crusgalli</i>	FACW	0	exotic
blunt spikerush	<i>Eleocharis obtusa</i>	OBL	1	dominant
Pennsylvania smartweed	<i>Polygonum pensylvanicum</i>	FACW+	0	
willow-weed	<i>Polygonum lapathifolium</i>	FACW+	0	
total hydrophytic taxa observed			4	
average of FQA (dominant wetland species only)			0.25	
number of indicator taxa			0	



# I-69 Wetland Quality Assessment Profile

Date Report Generated: 2/17/2006  
Wetland site: Section 1  
Data reference # W24  
Date of site visit: 08/25/05  
Total wetland area: 0.387 acres

Wetland Impact #9

<b>Polygon Information</b>	
Polygon ID	0
Polygon Size (acres)	0.190
Wetland Community Type	SM
<b>Red Flag (Special) Indicators</b>	
Special Hydrologic Conditions	N
Special Community Type	N
Rare-Threatened-Endangered Species	N
<b>Animal Habitat Measures</b>	
Wetland size and connectivity	3
Surrounding land use	3
Standing water	2
Dead woody material	1
Zonation and interspersion	3
Stratification	1
Tree canopy	1
Mature trees	1
<b>Animal Habitat Measure Score (min = 8, max = 24,</b>	<b>15</b>
<b>Animal Habitat Measure Rating</b>	<b>fair</b>
<b>Botanical Measures (all except exotics dependent upon community type)</b>	
Number of dominant plant taxa observed	1
Conservatism rating	1
Total hydrophytic taxa observed	2
Number of indicator taxa	1
Exotic species rating	2
<b>Botanical Measure Score (min = 5, max = 15),</b>	<b>7</b>
<b>Botanical Measure Rating</b>	<b>poor</b>
<b>Hydrology Measures</b>	
Water quality protection (= no. of yes answers)	5
Flood and storm water storage (= no. of yes answers)	1
<b>Site/Hydrology Score (min = 11, max = 33)</b>	<b>23</b>
<b>Site/Hydrology Rating</b>	<b>fair</b>

## In-WRAP Summary Sheet

Date Report Generated: 8-30-05  
Wetland site name: Sec1-W24  
Data Reference # —  
Date of Site Visit: 8-25-05  
NWI polygons in Site (quadrangle and NWI id. numbers): —

### TIER 1 SUMMARY:

- a. Total wetland area (hectares): 0.0121 hectares (0.03 acres)  
b. Wetland size and connectivity - contribution to animal habitat:  
☒ Valuable ☐ More Favorable ☐ Favorable ☐ Neutral  
c. Surrounding land use - numerical rank (max. = 1): 0.82  
d. Value surrounding area adds to animal habitat: ☒ Valuable ☐ Favorable ☐ Low

### TIER 2 SUMMARY

NWI Polygon Id. —

- a. Indiana Wetland community type: shallow marsh  
b. Standing water - contribution to animal habitat: ☐ Valuable ☒ Favorable ☐ Neutral  
c. Disturbances to site: ditching  
d. Exotic species rating: ☐ Good ☒ Medium ☐ Poor  
e. Special Hydrologic Conditions Observed: none  
f. Special Community Type: none  
g. Rare-Threatened-Endangered Species: none  
h. Polygon QualityDescriptor: ☐ Good ☒ Medium ☐ Poor

### TIER 3A SUMMARY

- a. Dead woody material as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
b. Water quality protection - numerical rank (6 max.): 5 Rating: ☒ Good ☐ Medium ☐ Poor  
c. Flood and storm water storage - numerical rank (5 max.): 1 Rating: ☐ Good ☐ Medium ☒ Poor

### TIER 3B SUMMARY

- a. Zonation and interspersation as indicator of animal habitat: ☒ Valuable ☐ Favorable ☐ Neutral  
b. Stratification as indicator of animal habitat: ☐ Valuable ☒ Neutral  
c. Number of dominant plant taxa observed: 2 Rating: ☐ Good ☐ Medium ☒ Poor  
d. Average coefficient of conservatism: 1.5 Rating: ☐ Good ☐ Medium ☒ Poor  
e. Tree canopy as indicator of animal habitat: ☐ Valuable ☒ Neutral  
f. Mature trees as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
g. Total hydrophytic taxa observed: 18 Rating: ☐ Good ☒ Medium ☐ Poor  
h. Number of indicator taxa: 1 Rating: ☐ Good ☐ Medium ☒ Poor

**Tier 1: Assessment Overview****1.1 Site Identification:**Project Site Name: I-W24Ownership (if known): —USGS Topographic Quadrangle(s): FranciscoUSGS Watershed 14-digit HUC: 65120209080030

Identify each National Wetland Inventory (NWI) Polygon within the project site (Polygon-specific data)

NWI Polygon ID #	<u>—</u>						
Cowardin Classification	<u>PW-H-n</u>						
Polygon Size (hectares)	<u>0.0121</u>						

**1.2 Site Visit:**Team Members: KMC & MWWCompany/Agency: JFAEWDate Assessed: 8/25/05 Time: 3 PM Weather Conditions: hot sunny low 90s

Note any unusual weather events that may have influenced the current conditions within this wetland system (e.g. recent heavy rains, an unusually dry season, an especially early spring, etc.):

**1.3 Wetland Size:**Size of site being assessed: 0.0121 hectares = 0.03 acresSize of total wetland complex (all contiguous wetland polygons): —**1.4 Site Setting:**

Degree of isolation from other wetland complexes:

- ☒ Site is connected upstream and downstream with other wetlands  
☐ Site is connected upstream with other channels  
☐ Site is connected downstream with other wetlands  
☐ Other wetlands are within 0.25 mile but not connected  
☐ Site is isolated

General assessment of adjacent land use/land cover within 50 meters of the perimeter of the wetland site (indicate % abundance of each type):

- ☒ Native Vegetation- woodland  
☒ Native Vegetation- old field/scrub  
☐ Agriculture - tilled  
☐ Agriculture- pasture  
☐ Recreation- green space, mowed  
☐ Road/Highway/Railroad Bed/Parking Lot  
☐ Industrial  
☐ Residential- single family  
☐ Commercial or Multifamily Residential

Abundance: 10  
90 $0.1 + 0.72 = 0.82$

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**Tier 2 Individual Polygon: Preliminary Assessment** (for each wetland polygon present on-site)

**2.1 Wetland Geomorphic Setting and Surface Water Flow:**

- |   |  |
|---|--|
| <input type="checkbox"/> Depressional                             | <input type="checkbox"/> Floodplain            |
| <input type="checkbox"/> Riverine (within the river/stream banks) | <input checked="" type="checkbox"/> Lacustrine |
| <input type="checkbox"/> Slope                                    |  |

**2.2 Presence of Standing Water:**

Is standing water normally present in the polygon? ☒ Yes ☐ No

If yes, is the water greater than 2 meters in depth? ☒ Yes ☒ No

Is standing water normally present in an adjacent polygon? ☐ Yes ☒ No

**2.3 Apparent Hydroperiod:**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Permanently Flooded           | <input type="checkbox"/> Artificially Flooded |
| <input type="checkbox"/> Seasonally Flooded                       | <input type="checkbox"/> Artificially Drained |
| <input type="checkbox"/> Saturated (surface water seldom present) |   |

**2.4 Soil Type:**

- ☐ Organic (ie. Peat, etc.)  
☒ Mineral  
☐ Both Mineral and Organic Present

**2.5 Wetland Community Type for this polygon (See Key to Wetland Communities of Indiana):**

Shallow Marsh

**2.6 Disturbances of Hydrology: None**

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Ditching | <input type="checkbox"/> Road or Railroad Embankment               |
| <input type="checkbox"/> Tiles               | <input type="checkbox"/> Culvert                                   |
| <input type="checkbox"/> Dams                | <input type="checkbox"/> Other Human Disturbances to the Hydrology |
- Describe: \_\_\_\_\_

**2.7 Presence of Invasive Exotic Vegetation:**

- |   |  |
|---|--|
| <input type="checkbox"/> Garlic Mustard     | <input type="checkbox"/> Glossy Buckthorn                      |
| <input type="checkbox"/> Phragmites         | <input type="checkbox"/> Reed Canary Grass                     |
| <input type="checkbox"/> Purple Loosestrife | <input checked="" type="checkbox"/> Other <u>all scattered</u> |
- List: see attached list

**2.8 Presence of Special Hydrologic Conditions (ie. seeps, wet slopes, floating mats):**

N/A

**2.9 Presence of Special Community Types: None**

- ☐ Bog ☐ Fen ☐ Wet Sand/ Muck Flats or Marl Seeps ☐ Sinkhole pond or swamp

**2.10 Presence of Known Federal or Indiana Rare, Threatened, or Endangered Species (RTES):**

- ☒ None Observed or Known To Be Present  
☐ RTES Present (list): \_\_\_\_\_

**2.11 Wetland Polygon Quality Descriptor (see Wetland Quality Descriptions, and check one below):**

- ☐ Good ☒ Medium ☐ Poor



NWI Polygon ID #: \_\_\_\_\_

Project #: 03/0730/00

1-W29

### Tier 3a Individual Polygon: Rapid Hydrology Indicators

#### 3a.1 Notable Features That Influence Water Quality and Hydrology:

Estimate Herbaceous Plant Cover (%) in the Polygon: ☐ 100-75 ☐ 75-50 ☐ 50-25 ☒ <25

Estimated Woody Plant Foliar Coverage in the Polygon ☐ 100-75 ☐ 75-50 ☐ 50-25 ☒ <25

Amount of Dead Woody Material on the Soil Surface:

☒ Nil (<5% cover) ☐ Scattered (5-15% cover) ☐ Frequent (>20% cover)

#### 3a.2 Water Quality Protection Questions:

1. ☐ Yes ☒ No The wetland has a significant amount of vegetative (specifically herbaceous and wood plants) density to potentially uptake dissolved nutrients.
2. ☒ Yes ☐ No Managed Water (eg. Municipal or storm water drainage, agricultural drainage outlet, industrial or municipal wastewater) is *not* discharged into the wetland polygon.

If the wetland in question is a depressional wetland, respond to questions 3a. If not, answer 3b.

- 3a. ☐ Yes ☐ No The wetland has a shape or flow that allows for the settling out of suspended materials before the water reaches the center of the wetland.
- 3b. ☒ Yes ☐ No The position of the wetland in the landscape is such that run-off is held or filtered before entering a surface body of water down-gradient.
4. ☒ Yes ☐ No Within 100 meters of its borders, the wetland *lacks* steep slopes, large impervious areas, moderate slopes with row cropping, or areas of severe overgrazing.
5. ☒ Yes ☐ No There are recreational lakes, fishable or navigable watercourses, or water supply sources down-gradient in the local watershed.
6. ☒ Yes ☐ No There is a vegetative buffer area (>15 meters wide), or another wetland polygon (areas where overland flow can be filtered) located upland and adjacent to the wetland polygon. If yes, describe the buffer area width and slope:

Ave. buffer width (meters): 15m

Approx. slope (%): <5%

#### 3a.2 Water Quality Protection Questions:

If the wetland in question is a depressional wetland, answer 1a. If not, answer 1b.

- 1a. ☐ Yes ☐ No The wetland is surrounded by a buffer of natural vegetation (forested, old field, scrub) that will slow overland flow into the wetland.
- 1b. ☐ Yes ☒ No There is a significant of microtopography or vegetative density within the wetland to reduce the velocity of water leaving the wetland.
2. ☐ Yes ☒ No The wetland *lacks* man-made structures that would speed the flow of water from the wetland (eg. tiles, culverts, ditches).
3. ☐ Yes ☒ No The flood potential of the local watershed in which the wetland is located is high (history of flood damages).
4. ☐ Yes ☒ No The wetland is located in a watershed in which the majority of the upland soils are clayey and impermeable, or bedrock is within two feet of the top of the soil profile.
5. ☒ Yes ☐ No The wetland is located in a watershed in which there are highly modified conditions due to existing development. (e.g. >5% of area is row crop, commercial, or residential use)

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

### Tier 3b Individual Polygon: Rapid Vegetation Description

#### 3b.1 Zoning and Interspersion:

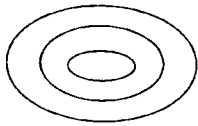
1. How many vegetation zones are evident in this wetland polygon? 1

1b. If only one vegetation zone is evident, which best describes the site?

- ☒ Polygon composed of a mosaic of small vegetation patches, hummocks, or tussocks; heterogeneous textures across the polygon  
☐ Polygon composed of a single vegetation type with more or less uniform texture across the polygon

2. If more than one vegetation zone is present in the polygon, which interspersion diagram most closely represents the distribution of these zones?

☐ Type One Interspersion



☐ Type Two Interspersion



#### 3b.2 Dominant Plant Species: Vegetation Zone A

##### Observation Point #1

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☒ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☒ >90%

Is there notable layering/stratification in this vegetation zone?

- ☐ Yes    ☒ No

Dominant Herbaceous Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a	<u>juncus effusus</u>	e	_____
b	<u>echinoclora</u>	f	_____
c	_____	g	_____
d	_____	h	_____

Dominant Shrub Species listed in order of relative abundance:

a	<u>n/a</u>	c	_____
b	_____	d	_____

Dominant Tree Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a	<u>n/a</u>	c	_____
b	_____	d	_____

Tree and Shrub Canopy:

- ☒ nil    ☐ separate, seldom touching    ☐ often touching    ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes    ☒ No

Other remarks (include personal comments about what adds to or detracts from the quality of this wetland site)

manmade pond w/wetland edge

NWI Polygon ID #: \_\_\_\_\_

Project #: 030730/60

**3b.2 Dominant Plant Species: Vegetation Zone B**

Observation Point #1 1-W24

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☐ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

- ☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a	_____	e	_____
b	_____	f	_____
c	_____	g	_____
d	_____	h	_____

Dominant **Shrub** Species listed in order of relative abundance:

a	_____	c	_____
b	_____	d	_____

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a	_____	c	_____
b	_____	d	_____

Tree and Shrub Canopy:

- ☐ nil    ☐ separate, seldom touching    ☒ often touching    ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes    ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

\_\_\_\_\_

**3b.2 Dominant Plant Species: Vegetation Zone C**

Observation Point #1

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☐ 10-25%    ☒ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

- ☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a	_____	e	_____
b	_____	f	_____
c	_____	g	_____
d	_____	h	_____

Dominant **Shrub** Species listed in order of relative abundance:

a	_____	c	_____
b	_____	d	_____

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a	_____	c	_____
b	_____	d	_____

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**3b.2 Dominant Plant Species: Vegetation Zone C (cont'd)**

Tree and Shrub Canopy:

☐ nil ☐ separate, seldom touching ☐ often touching ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

\_\_\_\_\_

**3b.2 Dominant Plant Species: Vegetation Zone D**

**Observation Point #1**

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25% ☐ 25-50% ☐ 50-75% ☐ 75-90% ☐ >90%

Is there notable layering/stratification in this vegetation zone? ☐ Yes ☐ No

**Dominant Herbaceous Species** (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a _____	e _____
b _____	f _____
c _____	g _____
d _____	h _____

**Dominant Shrub Species** listed in order of relative abundance:

a _____	c _____
b _____	d _____

**Dominant Tree Species** listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a _____	c _____
b _____	d _____

Tree and Shrub Canopy:

☐ nil ☐ separate, seldom touching ☐ often touching ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

\_\_\_\_\_



<b>Sec1-w24</b>				
<b>Common Name</b>	<b>Botanical Name</b>	<b>Indicator</b>	<b>FQA</b>	<b>notes</b>
false-nettle	<i>Boehmeria cylindrica</i>	OBL	3	
trumpet creeper	<i>Campsis radican</i>	FAC	1	
swamp oval sedge	<i>Carex muskingumensis</i>	OBL	2	
fox sedge	<i>Carex vulpinoidea</i>	OBL	7	
buttonbush	<i>Cephalanthus occidentalis</i>	OBL	5	
buttonbush	<i>Cephalanthus occidentalis</i>	OBL	5	
chufa	<i>Cyperus esculentus</i>	FACW	0	
barnyard grass	<i>Echinochloa crusgalli</i>	FACW	0	exotic/ dominant
yerba de tajo	<i>Eclipta prostrata</i>	FACW	3	
blunt spikerush	<i>Eleocharis obtusa</i>	OBL	1	
common boneset	<i>Eupatorium perfoliatum</i>	FACW+	4	
dwarf st. john's wort	<i>Hypericum mutilum</i>	FACW	4	
common rush	<i>Juncus effusus</i>	OBL	3	dominant
curly dock	<i>Rumex crispus</i>	FAC+	0	exotic
sandbar willow	<i>Salix exigua</i>	OBL	1	
yellow foxtail	<i>Setaria faberi</i>	FAC	0	exotic
blue vervain	<i>Verbena hastata</i>	FACW+	3	
total hydrophytic taxa observed			17	
average of FQA (dominant wetland species only)			1.5	
number of indicator taxa			1	

# I-69 Wetland Quality Assessment Profile

Date Report Generated: 2/17/2006  
Wetland site: Section 1  
Data reference # W26  
Date of site visit: 08/25/05  
Total wetland area: 0.088 acres

Wetland Impact #10

<b>Polygon Information</b>	
Polygon ID	0
Polygon Size (acres)	0.088
Wetland Community Type	FF
<b>Red Flag (Special) Indicators</b>	
Special Hydrologic Conditions	N
Special Community Type	N
Rare-Threatened-Endangered Species	N
<b>Animal Habitat Measures</b>	
Wetland size and connectivity	3
Surrounding land use	3
Standing water	1
Dead woody material	1
Zonation and interspersion	3
Stratification	3
Tree canopy	1
Mature trees	1
<b>Animal Habitat Measure Score (min = 8, max = 24, Animal Habitat Measure Rating)</b>	
	16 fair
<b>Botanical Measures (all except exotics dependent upon community type)</b>	
Number of dominant plant taxa observed	1
Conservatism rating	1
Total hydrophytic taxa observed	2
Number of indicator taxa	1
Exotic species rating	3
<b>Botanical Measure Score (min = 5, max = 15, Botanical Measure Rating)</b>	
	8 poor
<b>Hydrology Measures</b>	
Water quality protection (= no. of yes answers)	6
Flood and storm water storage (= no. of yes answers)	1
<b>Site/Hydrology Score (min = 11, max = 33) Site/Hydrology Rating</b>	
	25 fair

## In-WRAP Summary Sheet

Date Report Generated: 8-30-05  
Wetland site name: Sec 1-W24  
Data Reference # —  
Date of Site Visit: 8-25-05  
NWI polygons in Site (quadrangle and NWI id. numbers): —

### TIER 1 SUMMARY:

- a. Total wetland area (hectares): 0.2347 hectares (0.58 acres)  
b. Wetland size and connectivity - contribution to animal habitat:  
☒ Valuable ☐ More Favorable ☐ Favorable ☐ Neutral  
c. Surrounding land use - numerical rank (max. = 1): 0.8  
d. Value surrounding area adds to animal habitat: ☒ Valuable ☐ Favorable ☐ Low

### TIER 2 SUMMARY

NWI Polygon Id. —

- a. Indiana Wetland community type: forested floodplain  
b. Standing water - contribution to animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
c. Disturbances to site: none  
d. Exotic species rating: ☒ Good ☐ Medium ☐ Poor  
e. Special Hydrologic Conditions Observed: none  
f. Special Community Type: none  
g. Rare-Threatened-Endangered Species: none  
h. Polygon Quality Descriptor: ☐ Good ☒ Medium ☐ Poor

### TIER 3A SUMMARY

- a. Dead woody material as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
b. Water quality protection - numerical rank (6 max.): 6 Rating: ☒ Good ☐ Medium ☐ Poor  
c. Flood and storm water storage - numerical rank (5 max.): 1 Rating: ☐ Good ☐ Medium ☒ Poor

### TIER 3B SUMMARY

- a. Zonation and interspersation as indicator of animal habitat: ☒ Valuable ☐ Favorable ☐ Neutral  
b. Stratification as indicator of animal habitat: ☒ Valuable ☐ Neutral  
c. Number of dominant plant taxa observed: 4 Rating: ☐ Good ☐ Medium ☒ Poor  
d. Average coefficient of conservatism: 2.66 Rating: ☐ Good ☐ Medium ☒ Poor  
e. Tree canopy as indicator of animal habitat: ☐ Valuable ☒ Neutral  
f. Mature trees as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
g. Total hydrophytic taxa observed: 15 Rating: ☐ Good ☒ Medium ☐ Poor  
h. Number of indicator taxa: 2 Rating: ☐ Good ☐ Medium ☒ Poor

**Tier 1: Assessment Overview****1.1 Site Identification:**Project Site Name: 1-W26

Ownership (if known): \_\_\_\_\_

USGS Topographic Quadrangle(s): FranciscoUSGS Watershed 14-digit HUC: 05 1262 6A 08 10 30

Identify each National Wetland Inventory (NWI) Polygon within the project site (Polygon-specific data)

NWI Polygon ID #	<u>—</u>						
Cowardin Classification	<u>Port-Lcn</u>						
Polygon Size (hectares)	<u>0.2347</u>						

**1.2 Site Visit:**Team Members: EMC MWWCompany/Agency: JENNEWDate Assessed: 8-25-05 Time: 3:50pm Weather Conditions: ht sunny 10 90's

Note any unusual weather events that may have influenced the current conditions within this wetland system (e.g. recent heavy rains, an unusually dry season, an especially early spring, etc.):

**1.3 Wetland Size:**Size of site being assessed: 0.2347 hectares = 0.58 acresSize of total wetland complex (all contiguous wetland polygons): —**1.4 Site Setting:**

Degree of isolation from other wetland complexes:

- ☒ Site is connected upstream and downstream with other wetlands  
☐ Site is connected upstream with other channels  
☐ Site is connected downstream with other wetlands  
☐ Other wetlands are within 0.25 mile but not connected  
☐ Site is isolated

General assessment of adjacent land use/land cover within 50 meters of the perimeter of the wetland site (indicate % abundance of each type):

- |  |                  |
|--|------------------|
| <input type="checkbox"/> Native Vegetation- woodland                   | Abundance: _____ |
| <input checked="" type="checkbox"/> Native Vegetation- old field/scrub | <u>100</u>       |
| <input type="checkbox"/> Agriculture - tilled                          | _____            |
| <input type="checkbox"/> Agriculture- pasture                          | _____            |
| <input type="checkbox"/> Recreation- green space, mowed                | _____            |
| <input type="checkbox"/> Road/Highway/Railroad Bed/Parking Lot         | _____            |
| <input type="checkbox"/> Industrial                                    | _____            |
| <input type="checkbox"/> Residential- single family                    | _____            |
| <input type="checkbox"/> Commercial or Multifamily Residential         | _____            |



NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**Tier 2 Individual Polygon: Preliminary Assessment** (for each wetland polygon present on-site)

**2.1 Wetland Geomorphic Setting and Surface Water Flow:**

- |  |                                     |
|--|-------------------------------------|
| <input type="checkbox"/> Depressional  | <input type="checkbox"/> Floodplain |
| <input checked="" type="checkbox"/> Riverine (within the river/stream banks) | <input type="checkbox"/> Lacustrine |
| <input type="checkbox"/> Slope   |                                     |

**2.2 Presence of Standing Water:**

Is standing water normally present in the polygon? ☐ Yes ☒ No

If yes, is the water greater than 2 meters in depth? ☐ Yes ☐ No

Is standing water normally present in an adjacent polygon? ☐ Yes ☐ No

**2.3 Apparent Hydroperiod:**

- |   |   |
|---|---|
| <input type="checkbox"/> Permanently Flooded                      | <input type="checkbox"/> Artificially Flooded |
| <input checked="" type="checkbox"/> Seasonally Flooded            | <input type="checkbox"/> Artificially Drained |
| <input type="checkbox"/> Saturated (surface water seldom present) |   |

**2.4 Soil Type:**

- ☐ Organic (ie. Peat, etc.)  
☒ Mineral  
☐ Both Mineral and Organic Present

**2.5 Wetland Community Type for this polygon (See Key to Wetland Communities of Indiana):**

forested floodplain

**2.6 Disturbances of Hydrology:** None

- |                                   |  |
|-----------------------------------|--|
| <input type="checkbox"/> Ditching | <input type="checkbox"/> Road or Railroad Embankment               |
| <input type="checkbox"/> Tiles    | <input type="checkbox"/> Culvert                                   |
| <input type="checkbox"/> Dams     | <input type="checkbox"/> Other Human Disturbances to the Hydrology |
- Describe: \_\_\_\_\_

**2.7 Presence of Invasive Exotic Vegetation:**

- |   |  |
|---|--|
| <input type="checkbox"/> Garlic Mustard     | <input type="checkbox"/> Glossy Buckthorn                  |
| <input type="checkbox"/> <i>Phragmites</i>  | <input type="checkbox"/> Reed Canary Grass                 |
| <input type="checkbox"/> Purple Loosestrife | <input checked="" type="checkbox"/> Other <u>scattered</u> |

List: see attached list

**2.8 Presence of Special Hydrologic Conditions (ie. seeps, wet slopes, floating mats):**

n/a

**2.9 Presence of Special Community Types:** None

- ☐ Bog ☐ Fen ☐ Wet Sand/ Muck Flats or Marl Seeps ☐ Sinkhole pond or swamp

**2.10 Presence of Known Federal or Indiana Rare, Threatened, or Endangered Species (RTES):**

- ☒ None Observed or Known To Be Present  
☐ RTES Present (list): \_\_\_\_\_

**2.11 Wetland Polygon Quality Descriptor (see Wetland Quality Descriptions, and check one below):**

- ☐ Good ☒ Medium ☐ Poor

NWI Polygon ID #: \_\_\_\_\_

Project #: 030730/00  
1-W26

### Tier 3a Individual Polygon: Rapid Hydrology Indicators

#### 3a.1 Notable Features That Influence Water Quality and Hydrology:

Estimate Herbaceous Plant Cover (%) in the Polygon: ☒ 100-75 ☐ 75-50 ☐ 50-25 ☐ <25

Estimated Woody Plant Foliar Coverage in the Polygon: ☐ 100-75 ☒ 75-50 ☐ 50-25 ☐ <25

Amount of Dead Woody Material on the Soil Surface:

☒ Nil (<5% cover) ☐ Scattered (5-15% cover) ☐ Frequent (>20% cover)

#### 3a.2 Water Quality Protection Questions:

1. ☒ Yes ☐ No The wetland has a significant amount of vegetative (specifically herbaceous and wood plants) density to potentially uptake dissolved nutrients.
2. ☒ Yes ☐ No Managed Water (eg. Municipal or storm water drainage, agricultural drainage outlet, industrial or municipal wastewater) is **not** discharged into the wetland polygon.

If the wetland in question is a depressional wetland, respond to questions 3a. If not, answer 3b.

- 3a. ☐ Yes ☐ No The wetland has a shape or flow that allows for the settling out of suspended materials before the water reaches the center of the wetland.
- 3b. ☒ Yes ☐ No The position of the wetland in the landscape is such that run-off is held or filtered before entering a surface body of water down-gradient.
4. ☒ Yes ☐ No Within 100 meters of its borders, the wetland **lacks** steep slopes, large impervious areas, moderate slopes with row cropping, or areas of severe overgrazing.
5. ☒ Yes ☐ No There are recreational lakes, fishable or navigable watercourses, or water supply sources down-gradient in the local watershed.
6. ☒ Yes ☐ No There is a vegetative buffer area (>15 meters wide), or another wetland polygon (areas where overland flow can be filtered) located upland and adjacent to the wetland polygon. If yes, describe the buffer area width and slope: old field/scrub

Ave. buffer width (meters): >100m Approx. slope (%): 6%

#### 3a.2 Water Quality Protection Questions:

If the wetland in question is a depressional wetland, answer 1a. If not, answer 1b.

- 1a. ☐ Yes ☐ No The wetland is surrounded by a buffer of natural vegetation (forested, old field, scrub) that will slow overland flow into the wetland.
- 1b. ☐ Yes ☒ No There is a significant of microtopography or vegetative density within the wetland to reduce the velocity of water leaving the wetland.
2. ☐ Yes ☒ No The wetland **lacks** man-made structures that would speed the flow of water from the wetland (eg. tiles, culverts, ditches).
3. ☐ Yes ☒ No The flood potential of the local watershed in which the wetland is located is high (history of flood damages).
4. ☐ Yes ☒ No The wetland is located in a watershed in which the majority of the upland soils are clayey and impermeable, or bedrock is within two feet of the top of the soil profile.
5. ☒ Yes ☐ No The wetland is located in a watershed in which there are highly modified conditions due to existing development. (e.g. >5% of area is row crop, commercial, or residential use)

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

### Tier 3b Individual Polygon: Rapid Vegetation Description

#### 3b.1 Zoning and Interspersion:

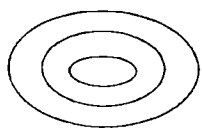
1. How many vegetation zones are evident in this wetland polygon? \_\_\_\_\_

1b. If only one vegetation zone is evident, which best describes the site?

- ☒ Polygon composed of a mosaic of small vegetation patches, hummocks, or tussocks; heterogeneous textures across the polygon
- ☐ Polygon composed of a single vegetation type with more or less uniform texture across the polygon

2. If more than one vegetation zone is present in the polygon, which interspersion diagram most closely represents the distribution of these zones?

☐ Type One Interspersion



☐ Type Two Interspersion



#### 3b.2 Dominant Plant Species: Vegetation Zone A

#### Observation Point #1

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☒ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☒ >90%

Is there notable layering/stratification in this vegetation zone?

- ☒ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a Solidago canadenses  
b rx sp.  
c Galatis arund.  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a n/a  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a Acer saccharinum  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Tree and Shrub Canopy:

- ☐ nil    ☒ separate, seldom touching    ☐ often touching    ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes    ☒ No

Other remarks (include personal comments about what adds to or detracts from the quality of this wetland site)

also did HMEI = stream bed within wetland  
- connection between manmade wetlands

NWI Polygon ID #: \_\_\_\_\_

Project #: 630730/00

**3b.2 Dominant Plant Species: Vegetation Zone B**

Observation Point #1 1-W20

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a _____	e _____
b _____	f _____
c _____	g _____
d _____	h _____

Dominant **Shrub** Species listed in order of relative abundance:

a _____	c _____
b _____	d _____

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a _____	c _____
b _____	d _____

Tree and Shrub Canopy:

☐ nil    ☐ separate, seldom touching    ☒ often touching    ☐ more or less closed

Mature trees (>12" dbh) present:    ☐ Yes    ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

**3b.2 Dominant Plant Species: Vegetation Zone C**

Observation Point #1

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25%    ☒ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a _____	e _____
b _____	f _____
c _____	g _____
d _____	h _____

Dominant **Shrub** Species listed in order of relative abundance:

a _____	c _____
b _____	d _____

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a _____	c _____
b _____	d _____



NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**3b.2 Dominant Plant Species: Vegetation Zone C (cont'd)**

Tree and Shrub Canopy:

☐ nil ☐ separate, seldom touching ☐ often touching ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

---

**3b.2 Dominant Plant Species: Vegetation Zone D**

**Observation Point #1**

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25% ☐ 25-50% ☐ 50-75% ☐ 75-90% ☐ >90%

Is there notable layering/stratification in this vegetation zone? ☐ Yes ☐ No

**Dominant Herbaceous Species** (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a _____	e _____
b _____	f _____
c _____	g _____
d _____	h _____

**Dominant Shrub Species** listed in order of relative abundance:

a _____	c _____
b _____	d _____

**Dominant Tree Species** listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a _____	c _____
b _____	d _____

Tree and Shrub Canopy:

☐ nil ☐ separate, seldom touching ☐ often touching ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

---

<b>Sec1-w26</b>				
<b>Common Name</b>	<b>Botanical Name</b>	<b>Indicator</b>	<b>FQA</b>	<b>notes</b>
false-nettle	<i>Boehmeria cylindrica</i>	OBL	3	
fescue oval sedge	<i>Carex festucacea</i>	FAC	2	
common hop sedge	<i>Carex lupulina</i>	OBL	7	
sedge	<i>Carex</i> sp.	FACW	7	dominant
common persimmons	<i>Diospyros virginiana</i>	FAC	2	
white avens	<i>Geum canadense</i>	FAC	1	
hypericum perfoliatum	<i>Hypericum perfoliatum</i>	UPL	0	exotic/upland
whitegrass	<i>Leersia virginica</i>	OBL	4	
sweet gum	<i>Liquidambar styraciflua</i>	FACW	4	
smartweed (formerly polygonum punctatum)	<i>Persicaria punctata</i>	OBL	3	
reed canary grass	<i>Phalaris arundinacea</i>	FACW+	0	dominant/ exotic
dwarf sumac	<i>Rhus copallina</i>	UPL	3	upland
allegheny blackberry	<i>Rubus allegheniensis</i>	FACU+	2	
black willow	<i>Salix nigra</i>	OBL	3	
green bulrush	<i>Scirpus atrovirens</i>	OBL	4	
canada goldenrod	<i>Solidago canadensis</i>	FACU	0	dominant/ upland
total hydrophytic taxa observed			13	
average of FQA (dominant wetland species only)			3.5	
number of indicator taxa			2	

# I-69 Wetland Quality Assessment Profile

Date Report Generated: 2/17/2006  
 Wetland site: Section 1  
 Data reference # W31  
 Date of site visit: 08/25/05  
 Total wetland area: 3.846 acres  
 Wetland Impact #11

<b>Polygon Information</b>	
Polygon ID	0
Polygon Size (acres)	1.900
Wetland Community Type	SM
<b>Red Flag (Special) Indicators</b>	
Special Hydrologic Conditions	N
Special Community Type	N
Rare-Threatened-Endangered Species	N
<b>Animal Habitat Measures</b>	
Wetland size and connectivity	3
Surrounding land use	3
Standing water	2
Dead woody material	1
Zonation and intersperson	2
Stratification	1
Tree canopy	1
Mature trees	1
<b>Animal Habitat Measure Score (min = 8, max = 24,</b>	<b>14</b>
<b>Animal Habitat Measure Rating</b>	<b>fair</b>
<b>Botanical Measures (all except exotics dependent upon community type)</b>	
Number of dominant plant taxa observed	1
Conservatism rating	1
Total hydrophytic taxa observed	1
Number of indicator taxa	1
Exotic species rating	2
<b>Botanical Measure Score (min = 5, max = 15,</b>	<b>6</b>
<b>Botanical Measure Rating</b>	<b>poor</b>
<b>Hydrology Measures</b>	
Water quality protection (= no. of yes answers)	4
Flood and storm water storage (= no. of yes answers)	3
<b>Site/Hydrology Score (min = 11, max = 33)</b>	<b>25</b>
<b>Site/Hydrology Rating</b>	<b>fair</b>

## In-WRAP Summary Sheet

Date Report Generated: 8-30-05  
Wetland site name: Spec-W31  
Data Reference # —  
Date of Site Visit: 8-25-05  
NWI polygons in Site (quadrangle and NWI id. numbers): —

### TIER 1 SUMMARY:

- a. Total wetland area (hectares): 0.7648 hectares (1.89 acres)  
b. Wetland size and connectivity - contribution to animal habitat:  
☒ Valuable ☐ More Favorable ☐ Favorable ☐ Neutral  
c. Surrounding land use - numerical rank (max. = 1): 0.74  
d. Value surrounding area adds to animal habitat: ☒ Valuable ☐ Favorable ☐ Low

### TIER 2 SUMMARY

NWI Polygon Id. —

- a. Indiana Wetland community type: shallow marsh  
b. Standing water - contribution to animal habitat: ☐ Valuable ☒ Favorable ☐ Neutral  
c. Disturbances to site: none  
d. Exotic species rating: ☐ Good ☒ Medium ☐ Poor  
e. Special Hydrologic Conditions Observed: none  
f. Special Community Type: none  
g. Rare-Threatened-Endangered Species: none  
h. Polygon QualityDescriptor: ☐ Good ☐ Medium ☒ Poor

### TIER 3A SUMMARY

- a. Dead woody material as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
b. Water quality protection - numerical rank (6 max.): 4 Rating: ☐ Good ☒ Medium ☐ Poor  
c. Flood and storm water storage - numerical rank (5 max.): 3 Rating: ☐ Good ☒ Medium ☐ Poor

### TIER 3B SUMMARY

- a. Zonation and interspersation as indicator of animal habitat: ☐ Valuable ☒ Favorable ☐ Neutral  
b. Stratification as indicator of animal habitat: ☐ Valuable ☒ Neutral  
c. Number of dominant plant taxa observed: 2 Rating: ☐ Good ☐ Medium ☒ Poor  
d. Average coefficient of conservatism: 5 Rating: ☐ Good ☐ Medium ☒ Poor  
e. Tree canopy as indicator of animal habitat: ☐ Valuable ☒ Neutral  
f. Mature trees as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
g. Total hydrophytic taxa observed: 12 Rating: ☐ Good ☐ Medium ☒ Poor  
h. Number of indicator taxa: 2 Rating: ☐ Good ☐ Medium ☒ Poor



**Tier 1: Assessment Overview****1.1 Site Identification:**Project Site Name: 1-W31Ownership (if known): —USGS Topographic Quadrangle(s): FranciscoUSGS Watershed 14-digit HUC: 05 12 02 09 08 00 30

Identify each National Wetland Inventory (NWI) Polygon within the project site (Polygon-specific data)

NWI Polygon ID #	<u>—</u>						
Cowardin Classification	<u>POW-H-n</u>						
Polygon Size (hectares)	<u>0.7698</u>						

**1.2 Site Visit:**Team Members: EMC & MMWCompany/Agency: JENNYDate Assessed: 8-25-05Time: 3:15Weather Conditions: hot sunny low 90'sNote any unusual weather events that may have influenced the current conditions within this wetland system (e.g. recent heavy rains, an unusually dry season, an especially early spring, etc.):  
—**1.3 Wetland Size:**Size of site being assessed: 0.7698 hectares = 1.89 acresSize of total wetland complex (all contiguous wetland polygons): —**1.4 Site Setting:**

Degree of isolation from other wetland complexes:

- ☒ Site is connected upstream and downstream with other wetlands  
☐ Site is connected upstream with other channels  
☐ Site is connected downstream with other wetlands  
☐ Other wetlands are within 0.25 mile but not connected  
☐ Site is isolated

General assessment of adjacent land use/land cover within 50 meters of the perimeter of the wetland site (indicate % abundance of each type):

- ☒ Native Vegetation- woodland  
☒ Native Vegetation- old field/scrub  
☐ Agriculture - tilled  
☐ Agriculture- pasture  
☐ Recreation- green space, mowed  
☐ Road/Highway/Railroad Bed/Parking Lot  
☐ Industrial  
☐ Residential- single family  
☐ Commercial or Multifamily Residential

Abundance:

1090

$$6.1 + 0.69 = 0.79$$

NWI Polygon ID #: \_\_\_\_\_

Project #: 030730/00  
1-W31

### Tier 3a Individual Polygon: Rapid Hydrology Indicators

#### 3a.1 Notable Features That Influence Water Quality and Hydrology:

Estimate Herbaceous Plant Cover (%) in the Polygon: ☒ 100-75 ☐ 75-50 ☐ 50-25 ☐ <25

Estimated Woody Plant Foliar Coverage in the Polygon ☐ 100-75 ☐ 75-50 ☐ 50-25 ☒ <25

Amount of Dead Woody Material on the Soil Surface:

☒ Nil (<5% cover)

☐ Scattered (5-15% cover)

☐ Frequent (>20% cover)

#### 3a.2 Water Quality Protection Questions:

1. ☒ Yes ☐ No The wetland has a significant amount of vegetative (specifically herbaceous and wood plants) density to potentially uptake dissolved nutrients.
2. ☒ Yes ☐ No Managed Water (eg. Municipal or storm water drainage, agricultural drainage outlet, industrial or municipal wastewater) is **not** discharged into the wetland polygon.

If the wetland in question is a depressional wetland, respond to questions 3a. If not, answer 3b.

3a. ☐ Yes ☐ No The wetland has a shape or flow that allows for the settling out of suspended materials before the water reaches the center of the wetland.

3b. ☐ Yes ☒ No The position of the wetland in the landscape is such that run-off is held or filtered before entering a surface body of water down-gradient.

4. ☒ Yes ☐ No Within 100 meters of its borders, the wetland **lacks** steep slopes, large impervious areas, moderate slopes with row cropping, or areas of severe overgrazing.

5. ☐ Yes ☒ No There are recreational lakes, fishable or navigable watercourses, or water supply sources down-gradient in the local watershed.

6. ☒ Yes ☐ No There is a vegetative buffer area (>15 meters wide), or another wetland polygon (areas where overland flow can be filtered) located upland and adjacent to the wetland polygon. If yes, describe the buffer area width and slope: old field/scrub

Ave. buffer width (meters): >100m

Approx. slope (%): 60%

#### 3a.2 Water Quality Protection Questions:

If the wetland in question is a depressional wetland, answer 1a. If not, answer 1b.

1a. ☐ Yes ☐ No The wetland is surrounded by a buffer of natural vegetation (forested, old field, scrub) that will slow overland flow into the wetland.

1b. ☒ Yes ☐ No There is a significant of microtopography or vegetative density within the wetland to reduce the velocity of water leaving the wetland.

2. ☒ Yes ☐ No The wetland **lacks** man-made structures that would speed the flow of water from the wetland (eg. tiles, culverts, ditches).

3. ☐ Yes ☒ No The flood potential of the local watershed in which the wetland is located is high (history of flood damages).

4. ☐ Yes ☒ No The wetland is located in a watershed in which the majority of the upland soils are clayey and impermeable, or bedrock is within two feet of the top of the soil profile.

5. ☒ Yes ☐ No The wetland is located in a watershed in which there are highly modified conditions due to existing development. (e.g. >5% of area is row crop, commercial, or residential use)

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

### Tier 3b Individual Polygon: Rapid Vegetation Description

#### 3b.1 Zoning and Interspersion:

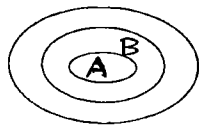
1. How many vegetation zones are evident in this wetland polygon? 2

1b. If only one vegetation zone is evident, which best describes the site?

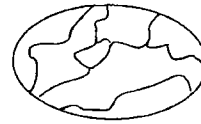
- ☐ Polygon composed of a mosaic of small vegetation patches, hummocks, or tussocks; heterogeneous textures across the polygon
- ☐ Polygon composed of a single vegetation type with more or less uniform texture across the polygon

2. If more than one vegetation zone is present in the polygon, which interspersion diagram most closely represents the distribution of these zones?

☒ Type One Interspersion



☐ Type Two Interspersion



#### 3b.2 Dominant Plant Species: Vegetation Zone A

##### Observation Point #1

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☒ 10-25%    ☒ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

- ☐ Yes    ☒ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a milfoil \*

b \_\_\_\_\_

c \_\_\_\_\_

d \_\_\_\_\_

e \_\_\_\_\_

f \_\_\_\_\_

g \_\_\_\_\_

h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a n/a

b \_\_\_\_\_

c \_\_\_\_\_

d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a n/a

b \_\_\_\_\_

c \_\_\_\_\_

d \_\_\_\_\_

Tree and Shrub Canopy:

- ☒ nil    ☐ separate, seldom touching    ☐ often touching    ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes    ☒ No

Other remarks (include personal comments about what adds to or detracts from the quality of this wetland site)

exotic milfoil

NWI Polygon ID #: \_\_\_\_\_

Project #: 030730/00

**3b.2 Dominant Plant Species: Vegetation Zone B**

Observation Point #1

1-W31

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25%    ☐ 25-50%    ☒ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

☐ Yes    ☒ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a Ludwigia  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a n/a  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a n/a  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Tree and Shrub Canopy:

☒ nil    ☐ separate, seldom touching    ☒ often touching    ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes    ☒ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

**3b.2 Dominant Plant Species: Vegetation Zone C**

Observation Point #1

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25%    ☒ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a \_\_\_\_\_  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_



NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**3b.2 Dominant Plant Species: Vegetation Zone C (cont'd)**

Tree and Shrub Canopy:

☐ nil ☐ separate, seldom touching ☐ often touching ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

---

**3b.2 Dominant Plant Species: Vegetation Zone D**

**Observation Point #1**

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25% ☐ 25-50% ☐ 50-75% ☐ 75-90% ☐ >90%

Is there notable layering/stratification in this vegetation zone? ☐ Yes ☐ No

**Dominant Herbaceous Species** (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a _____	e _____
b _____	f _____
c _____	g _____
d _____	h _____

**Dominant Shrub Species** listed in order of relative abundance:

a _____	c _____
b _____	d _____

**Dominant Tree Species** listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a _____	c _____
b _____	d _____

Tree and Shrub Canopy:

☐ nil ☐ separate, seldom touching ☐ often touching ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

---

<b>Sec1-w31</b>				
<b>Common Name</b>	<b>Botanical Name</b>	<b>Indicator</b>	<b>FQA</b>	<b>notes</b>
alse-nettle	<i>Boehmeria cylindrica</i>	OBL	3	
swamp oval sedge	<i>Carex muskingumensis</i>	OBL	2	
arnyard grass	<i>Echinochloa crusgalli</i>	FACW	0	exotic
spike rush	<i>Eleocharis</i>	OBL	9	
ommon rush	<i>Juncus effusus</i>	OBL	3	
alse loosestrife	<i>Ludwegia polycarpa</i>	OBL	4	
uropean water milfoil	<i>Myriophyllum spicatum</i>	OBL	0	exotic/ dominant
reed canary grass	<i>Phalaris arundinacea</i>	FACW+	0	exotic
ack willow	<i>Salix nigra</i>	OBL	3	
bald cypress	<i>Taxodium distichum</i>	OBL	10	
ommon cattail	<i>Typha latifolia</i>	OBL	1	
total hydrophytic taxa observed			12	
verage of FQA (dominant wetland species only)			0	
number of indicator taxa			2	

# I-69 Wetland Quality Assessment Profile

Date Report Generated: 2/17/2006  
Wetland site: Section 1  
Data reference #: W28  
Date of site visit: 08/25/05  
Total wetland area: 0.216 acres

Wetland Impact #12

<b>Polygon Information</b>	
Polygon ID	0
Polygon Size (acres)	0.072
Wetland Community Type	SM
<b>Red Flag (Special) Indicators</b>	
Special Hydrologic Conditions	N
Special Community Type	N
Rare-Threatened-Endangered Species	N
<b>Animal Habitat Measures</b>	
Wetland size and connectivity	3
Surrounding land use	3
Standing water	2
Dead woody material	1
Zonation and interspersion	3
Stratification	1
Tree canopy	1
Mature trees	1
<b>Animal Habitat Measure Score (min = 8, max = 24, 15 fair)</b>	
<b>Animal Habitat Measure Rating</b>	
<b>Botanical Measures (all except exotics dependent upon community type)</b>	
Number of dominant plant taxa observed	1
Conservatism rating	1
Total hydrophytic taxa observed	1
Number of indicator taxa	1
Exotic species rating	3
<b>Botanical Measure Score (min = 5, max = 15; 7 poor)</b>	
<b>Botanical Measure Rating</b>	
<b>Hydrology Measures</b>	
Water quality protection (= no. of yes answers)	5
Flood and storm water storage (= no. of yes answers)	2
<b>Site/Hydrology Score (min = 11, max = 33) 25 fair</b>	
<b>Site/Hydrology Rating</b>	

## In-WRAP Summary Sheet

Date Report Generated: 8-30-05  
Wetland site name: Sec1-W28  
Data Reference #         
Date of Site Visit: 8-25-05  
NWI polygons in Site (quadrangle and NWI id. numbers):       

### TIER 1 SUMMARY:

- a. Total wetland area (hectares): 0.1497 hectares (0.37 acres)  
b. Wetland size and connectivity - contribution to animal habitat:  
☒ Valuable ☐ More Favorable ☐ Favorable ☐ Neutral  
c. Surrounding land use - numerical rank (max. = 1): 0.8  
d. Value surrounding area adds to animal habitat: ☒ Valuable ☐ Favorable ☐ Low

### TIER 2 SUMMARY

NWI Polygon Id.       

- a. Indiana Wetland community type: Shallow Marsh  
b. Standing water - contribution to animal habitat: ☐ Valuable ☒ Favorable ☐ Neutral  
c. Disturbances to site: none  
d. Exotic species rating: ☒ Good ☐ Medium ☐ Poor  
e. Special Hydrologic Conditions Observed: none  
f. Special Community Type: none  
g. Rare-Threatened-Endangered Species: none  
h. Polygon Quality Descriptor: ☐ Good ☒ Medium ☐ Poor

### TIER 3A SUMMARY

- a. Dead woody material as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
b. Water quality protection - numerical rank (6 max.): 5 Rating: ☒ Good ☐ Medium ☐ Poor  
c. Flood and storm water storage - numerical rank (5 max.): 2 Rating: ☐ Good ☒ Medium ☐ Poor

### TIER 3B SUMMARY

- a. Zonation and interspersation as indicator of animal habitat: ☒ Valuable ☐ Favorable ☐ Neutral  
b. Stratification as indicator of animal habitat: ☐ Valuable ☒ Neutral  
c. Number of dominant plant taxa observed: 2 Rating: ☐ Good ☐ Medium ☒ Poor  
d. Average coefficient of conservatism: 1.5 Rating: ☐ Good ☐ Medium ☒ Poor  
e. Tree canopy as indicator of animal habitat: ☐ Valuable ☒ Neutral  
f. Mature trees as indicator of animal habitat: ☐ Valuable ☐ Favorable ☒ Neutral  
g. Total hydrophytic taxa observed: 10 Rating: ☐ Good ☐ Medium ☒ Poor  
h. Number of indicator taxa: 1 Rating: ☐ Good ☐ Medium ☒ Poor



### 1.1 Site Identification:

**Identify each National Wetland Inventory (NWI) Polygon within the project site (Polygon-specific data)**

## 1.2 Site Visit:

Note any unusual weather events that may have influenced the current conditions within this wetland system (e.g. recent heavy rains, an unusually dry season, an especially early spring, etc.):

Size of site being assessed: 0.1497 hectares = 0.257 acres  
Size of total wetland complex (all contiguous wetland polygons): —

**Degree of isolation from other wetland complexes:**

- ☒ Site is connected upstream and downstream with other wetlands
- ☐ Site is connected upstream with other channels
- ☐ Site is connected downstream with other wetlands
- ☐ Other wetlands are within 0.25 mile but not connected
- ☐ Site is isolated

General assessment of adjacent land use/land cover within 50 meters of the perimeter of the wetland site (indicate % abundance of each type):

- ☐ Native Vegetation- woodland
- ☒ Native Vegetation- old field/scrub
- ☐ Agriculture - tilled
- ☐ Agriculture- pasture
- ☐ Recreation- green space, mowed
- ☐ Road/Highway/Railroad Bed/Parking Lot
- ☐ Industrial
- ☐ Residential- single family
- ☐ Commercial or Multifamily Residential
- Abundance: 100

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**Tier 2 Individual Polygon: Preliminary Assessment** (for each wetland polygon present on-site)

**2.1 Wetland Geomorphic Setting and Surface Water Flow:**

- |   |  |
|---|--|
| <input type="checkbox"/> Depressional                             | <input type="checkbox"/> Floodplain            |
| <input type="checkbox"/> Riverine (within the river/stream banks) | <input checked="" type="checkbox"/> Lacustrine |
| <input type="checkbox"/> Slope                                    |  |

**2.2 Presence of Standing Water:**

Is standing water normally present in the polygon? ☒ Yes ☐ No

If yes, is the water greater than 2 meters in depth? ☐ Yes ☒ No

Is standing water normally present in an adjacent polygon? ☐ Yes ☒ No

**2.3 Apparent Hydroperiod:**

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Permanently Flooded           | <input type="checkbox"/> Artificially Flooded |
| <input type="checkbox"/> Seasonally Flooded                       | <input type="checkbox"/> Artificially Drained |
| <input type="checkbox"/> Saturated (surface water seldom present) |   |

**2.4 Soil Type:**

- ☐ Organic (ie. Peat, etc.)  
☒ Mineral  
☐ Both Mineral and Organic Present

**2.5 Wetland Community Type for this polygon (See Key to Wetland Communities of Indiana):**

Shallow Marsh

**2.6 Disturbances of Hydrology:** None

- |                                   |  |
|-----------------------------------|--|
| <input type="checkbox"/> Ditching | <input type="checkbox"/> Road or Railroad Embankment               |
| <input type="checkbox"/> Tiles    | <input type="checkbox"/> Culvert                                   |
| <input type="checkbox"/> Dams     | <input type="checkbox"/> Other Human Disturbances to the Hydrology |
- Describe: \_\_\_\_\_

**2.7 Presence of Invasive Exotic Vegetation:**

- |   |  |
|---|--|
| <input type="checkbox"/> Garlic Mustard     | <input type="checkbox"/> Glossy Buckthorn                  |
| <input type="checkbox"/> <i>Phragmites</i>  | <input type="checkbox"/> Reed Canary Grass                 |
| <input type="checkbox"/> Purple Loosestrife | <input checked="" type="checkbox"/> Other <u>scattered</u> |

List: see attached list

**2.8 Presence of Special Hydrologic Conditions (ie. seeps, wet slopes, floating mats):**

n/a

**2.9 Presence of Special Community Types:** None

- ☐ Bog ☐ Fen ☐ Wet Sand/ Muck Flats or Marl Seeps ☐ Sinkhole pond or swamp

**2.10 Presence of Known Federal or Indiana Rare, Threatened, or Endangered Species (RTES):**

- ☒ None Observed or Known To Be Present  
☐ RTES Present (list): \_\_\_\_\_

**2.11 Wetland Polygon Quality Descriptor (see Wetland Quality Descriptions, and check one below):**

- ☐ Good ☒ Medium ☐ Poor

NWI Polygon ID #: \_\_\_\_\_

Project #: 030730/00  
1-W28

### Tier 3a Individual Polygon: Rapid Hydrology Indicators

#### 3a.1 Notable Features That Influence Water Quality and Hydrology:

Estimate Herbaceous Plant Cover (%) in the Polygon: ☐ 100-75 ☐ 75-50 ☐ 50-25 ☒ <25

Estimated Woody Plant Foliar Coverage in the Polygon ☐ 100-75 ☐ 75-50 ☐ 50-25 ☒ <25

Amount of Dead Woody Material on the Soil Surface:

☒ Nil (<5% cover) ☐ Scattered (5-15% cover) ☐ Frequent (>20% cover)

#### 3a.2 Water Quality Protection Questions:

1. ☐ Yes ☒ No The wetland has a significant amount of vegetative (specifically herbaceous and wood plants) density to potentially uptake dissolved nutrients.
2. ☒ Yes ☐ No Managed Water (eg. Municipal or storm water drainage, agricultural drainage outlet, industrial or municipal wastewater) is **not** discharged into the wetland polygon.

If the wetland in question is a depressional wetland, respond to questions 3a. If not, answer 3b.

- 3a. ☐ Yes ☐ No The wetland has a shape or flow that allows for the settling out of suspended materials before the water reaches the center of the wetland.
- 3b. ☒ Yes ☐ No The position of the wetland in the landscape is such that run-off is held or filtered before entering a surface body of water down-gradient.
4. ☒ Yes ☐ No Within 100 meters of its borders, the wetland **lacks** steep slopes, large impervious areas, moderate slopes with row cropping, or areas of severe overgrazing.
5. ☒ Yes ☐ No There are recreational lakes, fishable or navigable watercourses, or water supply sources down-gradient in the local watershed.
6. ☒ Yes ☐ No There is a vegetative buffer area (>15 meters wide), or another wetland polygon (areas where overland flow can be filtered) located upland and adjacent to the wetland polygon. If yes, describe the buffer area width and slope:

Ave. buffer width (meters): >100 m

Approx. slope (%): 6%

#### 3a.2 Water Quality Protection Questions:

If the wetland in question is a depressional wetland, answer 1a. If not, answer 1b.

- 1a. ☐ Yes ☐ No The wetland is surrounded by a buffer of natural vegetation (forested, old field, scrub) that will slow overland flow into the wetland.
- 1b. ☒ Yes ☐ No There is a significant of microtopography or vegetative density within the wetland to reduce the velocity of water leaving the wetland.
2. ☐ Yes ☒ No The wetland **lacks** man-made structures that would speed the flow of water from the wetland (eg. tiles, culverts, ditches).
3. ☐ Yes ☒ No The flood potential of the local watershed in which the wetland is located is high (history of flood damages).
4. ☐ Yes ☒ No The wetland is located in a watershed in which the majority of the upland soils are clayey and impermeable, or bedrock is within two feet of the top of the soil profile.
5. ☒ Yes ☐ No The wetland is located in a watershed in which there are highly modified conditions due to existing development. (e.g. >5% of area is row crop, commercial, or residential use)

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

### Tier 3b Individual Polygon: Rapid Vegetation Description

#### 3b.1 Zoning and Interspersion:

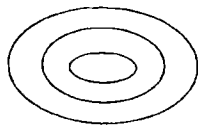
1. How many vegetation zones are evident in this wetland polygon? 1

1b. If only one vegetation zone is evident, which best describes the site?

- ☒ Polygon composed of a mosaic of small vegetation patches, hummocks, or tussocks; heterogeneous textures across the polygon
- ☐ Polygon composed of a single vegetation type with more or less uniform texture across the polygon

2. If more than one vegetation zone is present in the polygon, which interspersion diagram most closely represents the distribution of these zones?

☐ Type One Interspersion



☐ Type Two Interspersion



#### 3b.2 Dominant Plant Species: Vegetation Zone A

##### Observation Point #1

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

- ☒ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☒ >90%

Is there notable layering/stratification in this vegetation zone?

- ☐ Yes    ☒ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a achiroloa  
b salix  
c \_\_\_\_\_  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

Dominant **Shrub** Species listed in order of relative abundance:

a n/a  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a n/a  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Tree and Shrub Canopy:

- ☒ nil    ☐ separate, seldom touching    ☐ often touching    ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes    ☒ No

Other remarks (include personal comments about what adds to or detracts from the quality of this wetland site)

manmade pond w/wetland edge



NWI Polygon ID #: \_\_\_\_\_

Project #: 036730/06

**3b.2 Dominant Plant Species: Vegetation Zone B**

Observation Point #1 1-W28

Roll/Photo number(s): \_\_\_\_\_

(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25%    ☐ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a _____	e _____
b _____	f _____
c _____	g _____
d _____	h _____

Dominant **Shrub** Species listed in order of relative abundance:

a _____	c _____
b _____	d _____

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a _____	c _____
b _____	d _____

Tree and Shrub Canopy:

☐ nil    ☐ separate, seldom touching    ☒ often touching    ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes    ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

**3b.2 Dominant Plant Species: Vegetation Zone C**

Observation Point #1

Roll/Photo number(s): \_\_\_\_\_

(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25%    ☒ 25-50%    ☐ 50-75%    ☐ 75-90%    ☐ >90%

Is there notable layering/stratification in this vegetation zone?

☐ Yes    ☐ No

Dominant **Herbaceous** Species (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*" any species that form extensive monocultural patches):

a _____	e _____
b _____	f _____
c _____	g _____
d _____	h _____

Dominant **Shrub** Species listed in order of relative abundance:

a _____	c _____
b _____	d _____

Dominant **Tree** Species listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a _____	c _____
b _____	d _____

NWI Polygon ID #: \_\_\_\_\_

Project #: \_\_\_\_\_

**3b.2 Dominant Plant Species: Vegetation Zone C (cont'd)**

Tree and Shrub Canopy:

☐ nil ☐ separate, seldom touching ☐ often touching ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

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**3b.2 Dominant Plant Species: Vegetation Zone D**

**Observation Point #1**

Roll/Photo number(s): \_\_\_\_\_  
(Note: V-mark location on the polygon)

What percentage of the polygon does this vegetation zone occupy?

☐ 10-25% ☐ 25-50% ☐ 50-75% ☐ 75-90% ☐ >90%

Is there notable layering/stratification in this vegetation zone? ☐ Yes ☐ No

**Dominant Herbaceous Species** (ie. Covering more than 10% of the area) listed in order of relative abundance (Mark with an "\*\*\*" any species that form extensive monocultural patches):

a \_\_\_\_\_  
b \_\_\_\_\_  
c \_\_\_\_\_  
d \_\_\_\_\_

e \_\_\_\_\_  
f \_\_\_\_\_  
g \_\_\_\_\_  
h \_\_\_\_\_

**Dominant Shrub Species** listed in order of relative abundance:

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

**Dominant Tree Species** listed in order of relative abundance: P=pole (3-12" dbh) and M=mature (>12" dbh)

a \_\_\_\_\_  
b \_\_\_\_\_

c \_\_\_\_\_  
d \_\_\_\_\_

Tree and Shrub Canopy:

☐ nil ☐ separate, seldom touching ☐ often touching ☐ more or less closed

Mature trees (>12" dbh) present: ☐ Yes ☐ No

**Other remarks** (include personal comments about what adds to or detracts from the quality of this wetland site)

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<b>Sec1-w28</b>				
<b>Common Name</b>	<b>Botanical Name</b>	<b>Indicator</b>	<b>FQA</b>	<b>notes</b>
common beggar's-ticks	<i>Bidens frondosa</i>	FACW	1	
buttonbush	<i>Cephalanthus occidentalis</i>	OBL	5	
barnyard grass	<i>Echinochloa crusgalli</i>	FACW	0	dominant/ exotic
spikerush	<i>Eleocharis</i> spp.	OBL	9	
blunt spikerush	<i>Eleocharis obtusa</i>	OBL	1	
common rush	<i>Juncus effusus</i>	OBL	3	
europaean water milfoil	<i>Myriophyllum spicatum</i>	OBL	0	exotic
black willow	<i>Salix nigra</i>	OBL	3	dominant
blue vervain	<i>Verbena hastata</i>	FACW+	3	
total hydrophytic taxa observed			9	
average of FQA (dominant wetland species only)			1.5	
number of indicator taxa			1	

# **401 WQC APPLICATION ATTACHMENT #16**

**List of Adjacent Property Owners  
(Names and Addresses)**



## List of Adjacent Property Owner

<b>Name:</b> Allan A. & Mary Jo Adams  <b>Address:</b> 3316 Crossbow  <b>City:</b> Evansville <b>State:</b> IN <b>Zip Code:</b> 47715	<b>Name:</b> Gerald L. & Helen C. Akin  <b>Address:</b> 2323 Orchard Road  <b>City:</b> Evansville <b>State:</b> IN <b>Zip Code:</b> 47712
<b>Name:</b> Marjorie Bertram, et al, Trust  <b>Address:</b> RR #2 Box 54  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639	<b>Name:</b> Jerry D. Besing  <b>Address:</b> 4626 S. Flanders Street  <b>City:</b> Aurora <b>State:</b> CO <b>Zip Code:</b> 80015
<b>Name:</b> Jerry R. Besing  <b>Address:</b> RR #1 Box 297  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> Larry & Judith Besing  <b>Address:</b> RR #2 Box 248  <b>City:</b> Elberfeld <b>State:</b> IN <b>Zip Code:</b> 47613
<b>Name:</b> Alan Blanchette  <b>Address:</b> RR #2 Box 77  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639	<b>Name:</b> Don Brewer  <b>Address:</b> RR #1 Box 50  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Donald M. & Mary Ann Claycomb  <b>Address:</b> 11101 Park Road  <b>City:</b> Evansville <b>State:</b> IN <b>Zip Code:</b> 47725	<b>Name:</b> Mitchell K. & Debra D. Cox  <b>Address:</b> RR #2 Box 81  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639
<b>Name:</b> Harold R. & Jo Ann Deputy  <b>Address:</b> RR #2  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> Lawrence & Jackie Elderkin  <b>Address:</b> 11800 SR 68  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639
<b>Name:</b> Loretta Elpers, Trust  <b>Address:</b> 1308 Schroeder Road  <b>City:</b> Evansville <b>State:</b> IN <b>Zip Code:</b> 47725	<b>Name:</b> John H. Erdell  <b>Address:</b> RR #1 Box 107  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Jerry Freudenberg  <b>Address:</b> 412 Roosevelt Avenue  <b>City:</b> Princeton <b>State:</b> IN <b>Zip Code:</b> 47670	<b>Name:</b> Jack Freudenberg, Life Estate  <b>Address:</b> RR #2 Box 133  <b>City:</b> Ft. Branch <b>State:</b> IN <b>Zip Code:</b> 47648
<b>Name:</b> Edward A. Fuhs  <b>Address:</b> RR #2 Box 118A  <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648	<b>Name:</b> Nancy Gehlhausen  <b>Address:</b> RR #3 Box 66  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660

## List of Adjacent Property Owners Cont.

<b>Name:</b> Mildred Georges, Trust  <b>Address:</b> 106 Ben Street  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639	<b>Name:</b> Barbara Gottfriedt Etal. C/O Rita Becker  <b>Address:</b> 358 S Woodard Rd  <b>City:</b> Salina <b>State:</b> KS <b>Zip Code:</b> 67401
<b>Name:</b> Brian & Kelli Griffith  <b>Address:</b> 11699 Wheatonville Road  <b>City:</b> Elberfeld <b>State:</b> IN <b>Zip Code:</b> 47613	<b>Name:</b> Larry Gullett  <b>Address:</b> RR #1 Box 2 A  <b>City:</b> Francisco <b>State:</b> IN <b>Zip Code:</b> 47649
<b>Name:</b> Frederick W. & Frances Halwes, Trust  <b>Address:</b> RR #2 Box 131  <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648	<b>Name:</b> Karl A. Halwes, Trust  <b>Address:</b> RR #2 Box 134  <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648
<b>Name:</b> John B. & Diane F. Hasenour  <b>Address:</b> RR #2 Box 154 A  <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648	<b>Name:</b> Michael J. Hasenour  <b>Address:</b> RR #1 Box 128 B  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639
<b>Name:</b> Robert Othmar Hasenour  <b>Address:</b> RR #2 Box 50  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639	<b>Name:</b> Scott Hasenour  <b>Address:</b> RR #2 Box 52  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639
<b>Name:</b> Raymond Hawkins  <b>Address:</b> RR #2 Box 78  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639	<b>Name:</b> Arlo & Wilma Heilman  <b>Address:</b> 11955 W. SR 68  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639
<b>Name:</b> Kenneth Heironimus  <b>Address:</b> 220 W 7th Street  <b>City:</b> Bicknell <b>State:</b> IN <b>Zip Code:</b> 47512	<b>Name:</b> Marvin E. Heldt  <b>Address:</b> 721 Negley Avenue  <b>City:</b> Evansville <b>State:</b> IN <b>Zip Code:</b> 47711
<b>Name:</b> Oscar W. Highsmith  <b>Address:</b> RR #2 Box 152  <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648	<b>Name:</b> Henry J. & Chlo Hollander  <b>Address:</b> RR #2 Box 145  <b>City:</b> Ft. Branch <b>State:</b> IN <b>Zip Code:</b> 47648
<b>Name:</b> Henry R. Hollander  <b>Address:</b> RR #2 Box 120 E  <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648	<b>Name:</b> Thomas Hood  <b>Address:</b> RR #1 Box 182C  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660

## List of Adjacent Property Owners Cont.

<b>Name:</b> James H. Hook  <b>Address:</b> RR #1 Box 181 B  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> William M. Hornby, Life Estate, et al  <b>Address:</b> RR #2 Box 89  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639
<b>Name:</b> Ricky J. & Charlotte Hulfachor  <b>Address:</b> RR #1 Box 238  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> Jarold M. & Elizabeth A. Hunt  <b>Address:</b> 6339 Kratzville Road  <b>City:</b> Evansville <b>State:</b> IN <b>Zip Code:</b> 47710
<b>Name:</b> Robert V. Jacobs  <b>Address:</b> 3311 Amy Drive  <b>City:</b> Mt. Vernon <b>State:</b> IN <b>Zip Code:</b> 47620	<b>Name:</b> Koberstein Properties, Inc.  <b>Address:</b> RR #3 Box 363  <b>City:</b> Princeton <b>State:</b> IN <b>Zip Code:</b> 47670
<b>Name:</b> Tim Koelling  <b>Address:</b> RR #1 Box 182 AB  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> Edgar A. Kuhlenschmidt, Trust  <b>Address:</b> 109 N. Ninth Avenue  <b>City:</b> Evansville <b>State:</b> IN <b>Zip Code:</b> 47712
<b>Name:</b> Darvin Lamey (Trust)  <b>Address:</b> RR #2 Box 175  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639	<b>Name:</b> Robbie A. & Karen Lee  <b>Address:</b> RR 1Box 181  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Mrs. Richard Lefler  <b>Address:</b> RR #1 Box 329  <b>City:</b> Francisco <b>State:</b> IN <b>Zip Code:</b> 47649	<b>Name:</b> Marlin F. Loehr  <b>Address:</b> RR #1 Box 234C  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Joseph M. Logestan  <b>Address:</b> RR #1 Box 182A  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> Larry Logestan  <b>Address:</b> RR #1 Box 184C  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Wilma Lee Maier  <b>Address:</b> RR #1 Box 182B  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> Stephen Marvel  <b>Address:</b> RR #1 Box 319  <b>City:</b> Francisco <b>State:</b> IN <b>Zip Code:</b> 47649
<b>Name:</b> Michael B. McConnell  <b>Address:</b> RR #1 Box 127  <b>City:</b> Francisco <b>State:</b> IN <b>Zip Code:</b> 47649	<b>Name:</b> James L. McDevitt  <b>Address:</b> RR #1 Box 103  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660

## List of Adjacent Property Owners Cont.

<b>Name:</b> Mary Lou McKinney  <b>Address:</b> RR #1 Box 339  <b>City:</b> Francisco <b>State:</b> IN <b>Zip Code:</b> 47649	<b>Name:</b> Arnold A. Michel (Trust)  <b>Address:</b> 7295 S 200 E  <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648
<b>Name:</b> James A. Miller  <b>Address:</b> RR #1 Box 320  <b>City:</b> Francisco <b>State:</b> IN <b>Zip Code:</b> 47649	<b>Name:</b> Sharon Kay Miller  <b>Address:</b> 1506 Mary Lee Drive  <b>City:</b> Princeton <b>State:</b> IN <b>Zip Code:</b> 47670
<b>Name:</b> Steven Thomas Miller  <b>Address:</b> RR #1 Box 184C  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> William A. Miller  <b>Address:</b> RR #1 Box 102A  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Tom & Tony Montgomery  <b>Address:</b> RR #1 Box 183  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> David H. Morgan  <b>Address:</b> RR #1 Box 132A  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Dorothy P. Morgan (Trust)  <b>Address:</b> 11 W. Fremont Avenue  <b>City:</b> Littleton <b>State:</b> CO <b>Zip Code:</b> 80120	<b>Name:</b> Naedine A. Morgan, Life Estate, et al  <b>Address:</b> RR #1 Box 138  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Otto E. & Mary Frances Neyhouse  <b>Address:</b> RR #1 Box 207  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> Riley Osborne  <b>Address:</b> RR #3 Box 9  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> William A. Oxby  <b>Address:</b> 11099 SR 57  <b>City:</b> Elberfeld <b>State:</b> IN <b>Zip Code:</b> 47613	<b>Name:</b> Pauline M. Oxby, Trust  <b>Address:</b> RR #2 Box 47  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639
<b>Name:</b> Glenn Parker, Trust  <b>Address:</b> RR #2 Box 138  <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648	<b>Name:</b> Eugene L. & Susan Petitjean, Trust  <b>Address:</b> RR #2 Box 43A  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639
<b>Name:</b> Craig D. Pflug  <b>Address:</b> RR #1 Box 184 D  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> Don Pflug  <b>Address:</b> RR #1 Box 214  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660



## List of Adjacent Property Owners Cont.

<b>Name:</b> Gary W. & Judy A. Priest, Life Estate <b>Address:</b> 10499 SR 57 <b>City:</b> Elberfeld <b>State:</b> IN <b>Zip Code:</b> 47613	<b>Name:</b> Gregory S. Reising <b>Address:</b> RR #2 Box 123-1AF <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648
<b>Name:</b> Kenneth Ray, Marcia, & Pat Reising <b>Address:</b> RR #2 Box 125 <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648	<b>Name:</b> Mitzi A. Ricketts <b>Address:</b> RR #1 Box 134 <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Allen J. Riley <b>Address:</b> RR #1 Box 180 B <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> Karen S. Riley <b>Address:</b> RR #1 Box 321 <b>City:</b> Francisco <b>State:</b> IN <b>Zip Code:</b> 47649
<b>Name:</b> Alma Jean Schaefer <b>Address:</b> RR #2 Box 126-A <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648	<b>Name:</b> Harold E. Schlottman <b>Address:</b> 11615 Sawmill Drive <b>City:</b> Evansville <b>State:</b> IN <b>Zip Code:</b> 47725
<b>Name:</b> Rick L. & Lois K. Schmitt <b>Address:</b> RR #2 Box 36 <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639	<b>Name:</b> Doris Schwiersch <b>Address:</b> RR #2 Box 42 <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639
<b>Name:</b> Elmer O. Schwiersch <b>Address:</b> RR #2 Box 156-A <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639	<b>Name:</b> Larry A. Schwiersch <b>Address:</b> RR #2 Box 39B <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639
<b>Name:</b> Jeffrey A. Sevier <b>Address:</b> RR #1 Box 179 <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> Esley Sisson <b>Address:</b> RR #1 Box 236 <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> George Sydney Skelton, Life Estate <b>Address:</b> 458 W. CR 475S <b>City:</b> Winslow <b>State:</b> IN <b>Zip Code:</b> 47598	<b>Name:</b> Robert E. Southall, Sr. <b>Address:</b> 545 Overlook Drive <b>City:</b> North Palm Beach <b>State:</b> FL <b>Zip Code:</b> 33408
<b>Name:</b> Wayne Spindler <b>Address:</b> RR #2 Box 189 <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639	<b>Name:</b> Shirley Strickland <b>Address:</b> RR #3 Box 114B <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660

## List of Adjacent Property Owners Cont.

<b>Name:</b> Jennifer A. Taylor, et al <b>Address:</b> P.O. Box 7 <b>City:</b> Elberfeld <b>State:</b> IN <b>Zip Code:</b> 47613	<b>Name:</b> Leo F. Thompson <b>Address:</b> RR #2 Box 123 <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648
<b>Name:</b> Robert F. Traylor, Trust <b>Address:</b> 321 West Jennings Street <b>City:</b> Newburgh <b>State:</b> IN <b>Zip Code:</b> 47630	<b>Name:</b> John W. Wasson <b>Address:</b> 11501 Blue Grass Road <b>City:</b> Evansville <b>State:</b> IN <b>Zip Code:</b> 47725
<b>Name:</b> Jerry E. & Myrna Weatherholt <b>Address:</b> RR #2 Box 75 W <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639	<b>Name:</b> Darlene Williams <b>Address:</b> 102 Michael Lane <b>City:</b> Royal Center <b>State:</b> IN <b>Zip Code:</b> 46978
<b>Name:</b> Dolores J. Ziliak <b>Address:</b> RR #2 Box 28B <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648	<b>Name:</b> Donald R. & Barbara Ziliak <b>Address:</b> RR #2 Box 75 T <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639
<b>Name:</b> Bernard Hasenour & Son Farms, Inc <b>Address:</b> RR #2 Box 154 <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648	<b>Name:</b> Kuhlenschmidt Farm Land Trust <b>Address:</b> 105 N. Ninth St <b>City:</b> Evansville <b>State:</b> IN <b>Zip Code:</b> 47712
<b>Name:</b> Morgan Family Trust <b>Address:</b> 11 W. Fremont Avenue <b>City:</b> Littleton <b>State:</b> CO <b>Zip Code:</b> 80120	<b>Name:</b> Schurmeier Farms, Inc <b>Address:</b> RR #2 Box 130 <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648
<b>Name:</b> Southern Indiana Beagle Club <b>Address:</b> RR #4 Outer N. Embree <b>City:</b> Princeton <b>State:</b> IN <b>Zip Code:</b> 47670	<b>Name:</b> Texas Eastern Trans Corp <b>Address:</b> P.O. Box 1642 <b>City:</b> Houston <b>State:</b> TX <b>Zip Code:</b> 77251
<b>Name:</b> Vincent Georges & Sons Farm, Inc <b>Address:</b> RR #2 Box 147 <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648	<b>Name:</b> Voelkel Farms, Inc <b>Address:</b> RR #3 Box 151B <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Ziliak Farm, Inc <b>Address:</b> RR #1 Box 117 <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639	<b>Name:</b> Thomas G. & Patricia A. Hess <b>Address:</b> 5110 E SR 68 <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639

## List of Adjacent Property Owners Cont.

<b>Name:</b> Jeffrey W. Menke  <b>Address:</b> R 2 Box 51  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639	<b>Name:</b> John E. & Susan J. Steckler  <b>Address:</b> 10965 S 525 E  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639
<b>Name:</b> Jerome T. & Glenda Elpers  <b>Address:</b> 5024 E SR 68  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639	<b>Name:</b> Tony Bittner  <b>Address:</b> P.O. Box 307  <b>City:</b> Ownesville <b>State:</b> IN <b>Zip Code:</b> 47665
<b>Name:</b> Thelma M. Seib Trust  <b>Address:</b> 524 W SR 68  <b>City:</b> Haubstadt <b>State:</b> IN <b>Zip Code:</b> 47639	<b>Name:</b> William J. & Rita J. Hasenour  <b>Address:</b> 5271 E Hasenour Dr  <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648
<b>Name:</b> Ross & Company  <b>Address:</b> 7846 E SR 64  <b>City:</b> Francisco <b>State:</b> IN <b>Zip Code:</b> 47649	<b>Name:</b> Judith E. Hasenour  <b>Address:</b> R 1 Box 486  <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648
<b>Name:</b> Roy E. Freudenburg  <b>Address:</b> 6966 S 650 E  <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648	<b>Name:</b> Rod & Kathleen Kates  <b>Address:</b> 7310 E SR 168  <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648
<b>Name:</b> Joseph K. & Amy K. Reising  <b>Address:</b> R 2 Box 123 A  <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648	<b>Name:</b> Robert A. & Inez D. Meeks  <b>Address:</b> R 1 Box 109  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Vernon & Lucille Davis  <b>Address:</b> R 1 Box 223 A  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> Michael L. & Wanda L. Houchin  <b>Address:</b> R 1 Box 137  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Barbara S. Watkins  <b>Address:</b> 8476 St. Rt. 181 N  <b>City:</b> Bremen <b>State:</b> KY <b>Zip Code:</b> 42325	<b>Name:</b> Wendall J. & Debbie A. Bean  <b>Address:</b> R 1 Box 131  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Eddie & Ruth Davis  <b>Address:</b> 2007 S 175 E  <b>City:</b> Princeton <b>State:</b> IN <b>Zip Code:</b> 47670	<b>Name:</b> Don & Freda White  <b>Address:</b> R 1 Box 130  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660

### **List of Adjacent Property Owners Cont.**

<b>Name:</b> Robbie A. & Karen Lee  <b>Address:</b> R 1 Box 181  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> Dennis W. Jenkins  <b>Address:</b> R 3 Box 67 D  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Thomas H. & Betty McCleary  <b>Address:</b> R 1 Box 228  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> James Buck  <b>Address:</b> R 1 Box 207 A  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Scott A. & Cara R. Lee  <b>Address:</b> R 1 Box 224  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> Alvin L. & Sara J. Sisson  <b>Address:</b> 2464 S 950 E  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660
<b>Name:</b> Dallas & Leetta Miller  <b>Address:</b> 8724 E SR 64  <b>City:</b> Oakland City <b>State:</b> IN <b>Zip Code:</b> 47660	<b>Name:</b> Henry R. & Lori A. Hollander  <b>Address:</b> 6256 S 725 E  <b>City:</b> Fort Branch <b>State:</b> IN <b>Zip Code:</b> 47648